VOLUME 15, NUMBER 5

September/October 2019

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A poem for vet techs
p 34

Celebrating superhero vet techs

Banfield PET HOSPITAL | NATIONAL VETERINARY TECHNICIAN WEEK 2019

+ Stories from the field
+ Recognizing rockstar techs on social media

+ **Hey rehab techs!** Check this out
p 26

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Happy National Veterinary Technician Week from dvm360.com!

Appreciation and inspiration for the technicians who serve pets and people every day.

If you're wondering how long we plan to particularly celebrate the work of veterinary technicians, here's your answer (courtesy of Lionel Richie): All *week* long!

And as a thank you, we're serving up free team training, appreciation and inspiration.

Not surprisingly, some of our favorite Fetch dvm360 conference speakers, contributors and rockstar DVMs are the biggest champions of techs (we knew they were smart). Flip to page 10 to read more in their own words about why they love their technicians and how they empower them to use their skills.

Make sure you check out the Vet Tech Week coverage at dvm360.com/vettechweek to get printable posters, thank-you notes, resources and more.

And special shout-out to Banfield Pet Health for their support of our celebration of Vet Tech Week 2019 and their ongoing committment to empowering veterinary technicians across the country.

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[1] Stray animal population booming in post-hurricane Puerto Rico. https://commmedia.psu.edu/news/story/stray-animal-population-booming-in-post-hurricane-puerto-rico. Accessed on July 26, 2019.

[2] Data on file.

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How to turn off your feline alarm clock

Know cat owners who regularly suffer 4 a.m. wakeup calls of cat paws to the face? (Or are you that cat owner?) Well, rest easy. Solutions are out there. *By Brendan Howard*

Nighttime waking is a problem that veterinary behaviorist Julia Albright, MA, DVM, DACVB, experienced firsthand with one of her cats. And it's serious. If a cat keeps a veterinary client awake, that can very quickly lead to euthanasia or rehoming of a pet.

The issue is, of course, that cats' sleep cycles are set to "when their prey is awake, at dawn and dusk," Dr. Albright told Fetch dvm360 attendees in her feline behavior session. Thus, some cats are awake and ready to hunt and eat when your cat-loving clients are hours from their wakeup alarm.

Before looking for a behavioral fix, if a cat suddenly exhibits nighttime waking, check for underlying medical issues (for example, pain or a metabolic condition).

"Psychoactive medications, deterrents and sound-blocking tools may be helpful tools for households," Dr. Albright explains in her session proceedings. "Factors such as age-related cognitive decline can be addressed with additional medications."

Barring physiological problems, one likely culprit is the cat's circadian rhythm. One solution is to try to adjust the cat's sleep cycle by setting regular times in the morning or evening to exercise and feed the cat. "[The right times] will vary from cat to cat," Dr. Albright says, so the veterinary client will need to experiment at home.

She also recommends that vet teams make sure clients understand that providing food or attention at particular times positively reinforces the attention-seeking behavior. If cat owners play with the cat or get up and feed the cat at the wrong times, it'll show in the cat's behavior.

"If they sometimes find something on the ledge and sometimes get access to the garbage, they'll keep doing it," Dr. Albright says, explaining that inconsistent "variable ratio" is a powerful motivator. "When [the cat never knows] when it's coming, that is a very successful way to maintain a behavior. If they're successful once every 500 times, that's enough."

The other solution for adjusting feeding times is a technological one, she says, which worked for her and her husband.

"Our cat would scream in our faces from 4 a.m. to 6 a.m., so I uncoupled us from feeding him," she says. She installed an automatic food dispenser (for example, one like the PortionPro Rx or a similar feeder from pet retailers).

"Now he goes and yells at the food dispenser in the basement," Dr. Albright says. Problem solved!

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Cat myths that need to *go*

Brush up on your feline facts, veterinary team members, while you disabuse your well-meaning but ill-informed cat clients of some feline fallacies.

Ah, cats. Their self-reliant nature differs from that of the pack/social species they live with, and they domesticated themselves rather than being domesticated by us.[1] Here are a few things veterinary clients with cats might say—and the real feline truth.

1. 'Cats just need food, water, litter and a place to sleep'

That's all true, but it's just as important how many sets of these resources there are and where those resources are located. Food shouldn't be placed near water or the litter box. The litter box and water dish need to be fresh. Cats don't just need a place to sleep; they also need a way to observe their environment, exercise, express predatory behaviors and hide when they feel threatened.[2]

2. 'I know when my cat's sick'

Actually, maybe not. Cats evolved to hunt and feed themselves independent from others, and because this requires traveling in potentially unsafe locations and possibly becoming prey for other species, cats are superb at hiding vulnerability that accompanies illness. In fact, by the time a cat shows subtle signs of sickness, it's likely been ill for some time. Therefore, it's important that we learn these understated cues and teach them to our clients.[3]

3. 'Using a laser and proper analgesia protocol ensures a smooth recovery after declawing.'

Sadly, this isn't the case.Regardless of technique and even excellent analgesia used, the anatomic relationships of those delicate feet are permanently altered following onychectomy, resulting in unnatural alignment and musculoskeletal compensation. Worse, however, is that nerves have been cut and those nerves and the surrounding tissue are forever damaged and can cause chronic neuropathic pain. Regardless, it has been shown that the behaviors of many cats change after being declawed.[4]

There's WAY more where that came from—find 15 more highly specific cat myths at **dvm360.com/catmyths**. Plus, download a free client handout detailing these misconceptions so that your clients know truth from fiction.

MARTIN BARRAUD/GETTY IMAGE

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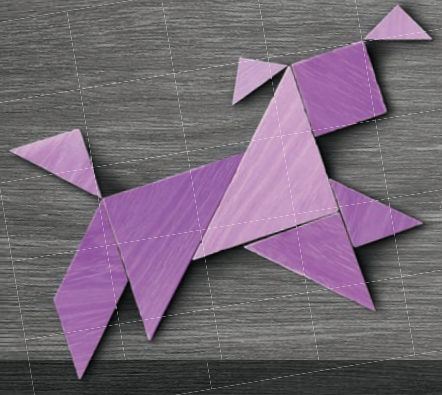

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Put rabies on the radar

Despite a massive worldwide effort to eradicate rabies, the disease still affects untold numbers of animals and tens of thousands of people each year in the U.S. and abroad. Here are five reasons why you should talk with your veterinary clients about rabies.

By Maureen McKinney

Rabies is one of the deadliest diseases on Earth. A viral zoonotic infection of the nervous system, rabies is transmitted when the saliva of an infected animal enters the bloodstream of another animal or human. Transmission usually occurs via a bite or scratch, although the virus can also gain entrance through an existing break in the skin (scratch, wound) or through the mucous membranes (mouth, eyes).

Nationwide efforts in the 1950s to mandate pet rabies vaccinations and implement leash control laws effectively curtailed the incidence of rabies in the U.S., but the disease can and does affect a handful of people and pets every year. That's why it's important for pet owners to be aware of these five facts about rabies.

1. Rabies is more common than most people realize

Rabies has been around for centuries. In the U.S., 4,454 confirmed cases in animals were reported to the Centers for Disease Control and Prevention in 2017—down 9.3% from 2016.[1] Of those cases, 276 were cats and 62 were dogs.[1]

Rabies is relatively rare in people the U.S. today—only one to three human deaths are attributed to the virus annually. Worldwide, though, an estimated 59,000 human deaths result from rabies each year, largely in poor regions of the world with large populations of free-roaming dogs.

The Zero by 30 campaign, launched by a worldwide collaborative partnership called United Against Rabies, has set a global goal to reach zero human deaths from canine rabies by 2030.

2. Bats are the most common reservoir in the U.S.

Any warm-blooded animal can acquire and transmit rabies if exposed to the virus (see sidebar). In the United States, rabies is found

EBFOTO/ ADOBE STOCK

primarily in wildlife (bats, raccoons, skunks, foxes and coyotes). Of domestic animals, cats are three to four times more likely than dogs to be reservoirs because many cats are feral, they generally have more contact with wild animals and fewer cats are vaccinated against rabies.[2]

Outside the U.S., 90% of rabies cases involve dogs, and it's those exposures that lead to 99% of human rabies deaths worldwide.[2]

Human deaths in the United States due to rabies are usually caused by bats, largely because a bite from a bat is so small that a person may not realize he or she has been bitten and thus does not seek medical care.

3. A rabid animal may appear docile

When most people picture a rabid dog, they imagine a snarling, crazed animal foaming at the mouth and trying to attack everything in sight (Cujo, anyone?). And this may well be the case … but it may not.

The progression of rabies is similar in animals and people, including early nonspecific signs (general weakness or discomfort, fever, headache), acute neurologic signs and, ultimately, death.[3] A normally docile animal may act unusually aggressive, a typically playful animal may appear withdrawn or shy and a nocturnal animal may be found out and about in daylight. Other possible signs and symptoms: appetite loss, pica, difficulty swallowing, hallucinations, hypersensitivity to touch or sound, hydrophobia, seizures and pawing at the mouth, among others.

4. Rabies is not necessarily a death sentence

Although rabies is invariably fatal once signs of the infection appear, the disease is preventable. It's called post-exposure prophylaxis (PEP), and it's pretty simple. About 40,000 people in the United States receive PEP each year following contact with a potentially rabid animal.

The incubation period for rabies is about three to 12 weeks[3] although the virus can lay dormant for more than a year. However, death from rabies is entirely preventable if treatment is initiated before clinical signs occur. Washing a bite or scratch wound immediately with soap and water may prevent the onset of disease.

PEP should be administered as soon as possible following known exposure to the rabies virus. In addition, PEP should be initiated any time a bat is found in the home of someone who was sleeping, incapacitated or unable to speak—even if a bite was not felt or witnessed.

Once upon a time (OK, before the early 1980s), PEP consisted of a series of 21 painful injections into the stomach with a long needle. Today, rabies vaccines are relatively painless and are given in the arm, much like a flu vaccine. The PEP regimen consists of a single dose of human rabies immune globulin and a dose of rabies vaccine as soon as possible after exposure, followed by three additional vaccine doses over a 14-day period.[3]

Individuals who are at high risk for exposure to rabies, such as veterinary practice personnel, can receive pre-exposure rabies vaccinations. This entails three vaccines administered in the deltoid area over the course of three to four weeks.[3]

For subsequent exposures, PEP requires only two doses of vaccine, once on the day of new exposure and again three days later.

5. Pet vaccinations are vital

Although people in the U.S. are more likely to be exposed to rabies through wild animals, pet owners may be exposed through a family pet after the pet is exposed to rabid wildlife. Ensuring that pets are up-to-date with rabies vaccination will prevent dogs and cats from acquiring the disease through wild animals and thus decrease the likelihood of transmission to people.

For dogs, the initial rabies vaccine is effective for one year. Subsequent vaccinations last for three years. Cats require annual vaccinations.

How the rabies virus does its damage

After the rabies virus enters the body, it travels along the nerves from the infection site to the spinal cord and brain. During this incubation period—which typically lasts three to 12 weeks or longer, depending on the bite or scratch location—the infected animal shows no clinical signs and cannot pass along the virus. When the virus reaches the brain, it multiplies rapidly then invades the salivary glands. This is the point at which progressive clinical signs appear, beginning with generalized weakness, fever or vomiting; moving to cerebral dysfunction, anxiety, confusion and agitation; progressing to delirium, abnormal behavior, hallucinations and hydrophobia; and culminating in death.

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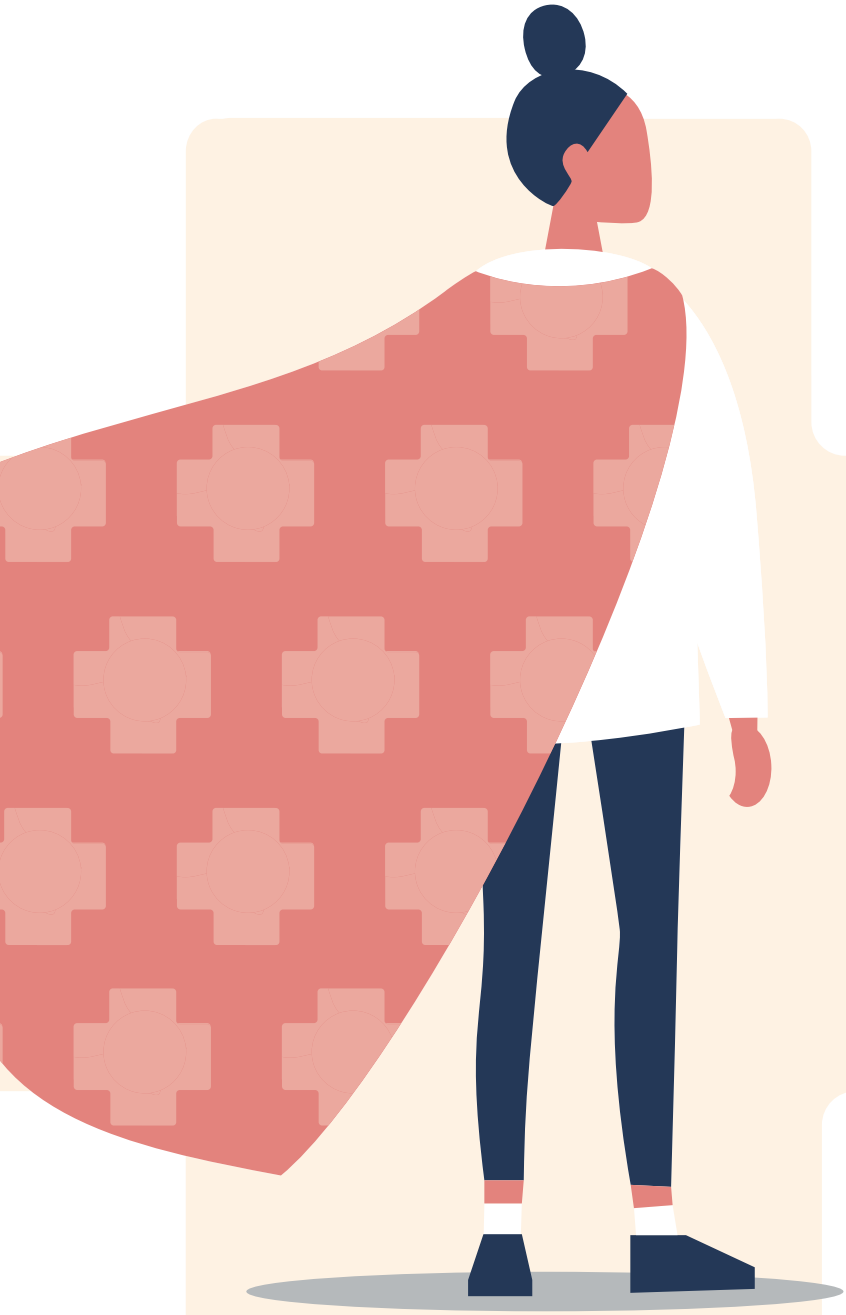
Stories of *badass* vet techs

Veterinary technicians regularly save the day. Here are some of our favorite stories (EVER) of techs in action.



Veterinary technicians can do it all. In honor of National Veterinary Technician Week and in order to celebrate the work they do every day, we reached out to some of our favorite dvm360 contributors and Fetch dvm360 speakers to tell us about the most badass thing they've ever seen a vet tech say or do. The answers ranged from highly specific clinical moments to essential everyday tasks to one particularly, um, *impressive* moment with an amorous client.

STANDING UP AND SPEAKING OUT

From Oriana D. Scislowicz, BS, LVT, aPHR

There was a patient that had suffered a brain injury and was doing extremely poorly and clearly suffering. The owners were adamant they wanted to keep him on the respirator and not euthanize despite his poor prognosis. The lead tech rallied for this patient, pushed the doctor to stand his ground with the owners and explain that this was unethical, and he couldn't continue to let this patient suffer. Ultimately the patient passed very soon after, but for the lead tech to have the courage to push for this and advocate for her patient really resonated with me.

ILLUSTRATION BASED ON NADIA_SNOPEK/ADOBE STOCK

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Master the calm vaccine visit

Communication and tactics that roll out in emails, texts, face-to-face conversations and in-practice techniques make wellness visits calmer, safer and more educational. p 3

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Master the calm vaccine visit

Pre-visit client education and exam-room visibility and efficiency make this practice owner's vaccine and wellness visits healthy, happy and profitable.

By Brendan Howard

A great veterinary visit at Veterinary Medical Center in Fort Mill, South Carolina, doesn't start in the exam room. Or at the front desk, when the receptionist greets client and patient.

It starts when the appointment is made and involves communication and tactics that roll out in emails, texts, face-to-face conversations and in-practice techniques that make wellness visits calmer, safer and more educational. Practice owner Julie Reck, DVM—a big fan of Fear Free practice and efficient yet educational appointments—shared some ideas with dvm360 that "close the client service circle" for pet owners coming in for these appointments.

A look at low-volume vaccines

Dr. Julie Reck says she thinks a little less volume and a little more time with low-volume vaccines is worth it, especially for smaller dogs.

"Some patients don't care at all when we give vaccines, because they're engaged in the treats," Dr. Reck says. "But I do personally see a difference [when I give low-volume vaccines] to sensitive patients or smaller patients."

Low-volume vaccines are often a talking point during the visit, too—a differentiator between vaccinations in clinic and those in pop-up shot clinics out in the community: "They're a conversation starter with clients. I'm giving the vaccines and telling them about less preservatives, lower volume and less pain for the pet."

Because clients can get nervous at the sight of the needle, and pets can pick up on clients' nervousness, Dr. Reck uses the conversation as a distraction "to activate clients' frontal lobe," she says. "They appreciate that level of detail and being invited into that discussion."

Before the vaccine or wellness visit

Records in! If this is a new client, Dr. Reck's team makes sure all the previous information from any other clinics is in the file. "If we need to call the clinic the day of the appointment and ask for the records, that stresses everybody out," she says.

Pet ready! Receptionists ask clients over the phone and in digital reminders as the day approaches to prepare pets in three ways (especially dogs):

1. **"Please bring the pet hungry."** The team will feed treats or a meal as positive reinforcement during the appointment.
2. **"Please bring a stool sample."** This is a bigger issue for cats than dogs, says Dr. Reck: "If it's a dog, I'm probably doing a rectal exam as part of a complete exam, but if I'm looking at cats, that's different. If I directly go get that sample, it's for sure going to piss off the cat."

It can also take upwards of 15 minutes to review the sample on a microscope, so if a stool sample wings its way to the lab while the rest of the exam starts, you're efficient. "I don't want to run that stool sample 25 minutes into the appointment," she says.

3. **"Please bring your pet dressed appropriately."** Of course, we're not talking Halloween costumes and cardigans for a chilly AC system: "Dogs need an appropriate collar they can't pull out of," Dr. Reck says. "And no retractable leashes—they'll get tangled up in reception and that's another few minutes we lose in the appointment."

When it comes to cats, Dr. Reck's team will work with anything a client brings, but carriers opened from the top are ideal.

4. **Bonus: "Please drive smoothly."** When Dr. Reck has time to educate, she'll encourage clients to take it easy on the way to the visit: no slamming the accelerator and the brake.

"If they hear the dog shuffling around in the back seat [for balance], that's not stress-free," she says. She encourages clients to make sure wherever the dog sits or stands has good footing (no slippery floor liners). "After a super-stressful drive, it's hard to unwind a patient from that," she says.

MARKO NOVKOV/ STOCK.ADOBE.COM

During the vaccine or wellness visit

> Tech kicks off! This one's familiar to most of you: The veterinary technician goes in first, takes a basic history, starts gathering an idea of what services are needed, then steps out of the room and starts the appointment record in the practice software, ordering up the basics of what client has accepted so far.

> Keep vaccines visible! It takes time for a technician to gather up the vaccines, but it's still more time-efficient and educational for vaccines to be administered in the exam room, says Dr. Reck. "During this time, the doctor is reviewing the technician's plan, discussing client concerns and adjusting the plan," she says. "The more time you take the pet out of the room, the more time you lose in that appointment."

> Reward big during pokes! Dr. Reck keeps the highest-value treat or meal for the patient during the most invasive procedures in a wellness exam, like vaccinations and blood draws.

"Cheerios are good for the physical exam, but I whip out the treats for the actual injections," she says. Dr. Reck smears food on a mat or uses a puzzle mat to keep a food-driven pet distracted: "They're engaged in that, standing still and physically relaxed. I get through 90% to 95% of visits without the pet noticing."

Needle etiquette

Dr. Julie Reck uses a new needle for each vaccine given and watches her technique as she gives vaccines during a wellness visit.

"Going through rubber stoppers dulls needles, and a duller needle means more drag, more tissue friction and inflammation," she says. "I also switch from 22- to 25-gauge as I go through the vaccinations, giving vaccines slowly. If we push really hard, I think it's like kinking the garden hose and spraying more forcefully. I don't want to cause trauma to the subcutaneous tissue."

She employs a number of Fear Free techniques in these visits, and that gives her team more time to educate, adds to the value of getting vaccinations and wellness exams at a veterinary practice and, best of all, gives pets a more pleasant experience, even if they're getting rectal exams, blood draws and vaccinations.

Talking it out with anti-vaxxers

Fear is a powerful emotion, so when veterinary clients refuse your recommendations, start with empathy.

By Sarah Wooten, DVM

A recent article on Slate.com reported that the anti-vaccination movement and its followers, known as anti-vaxxers, which was inspired by the now-proven-false report that vaccines cause autism in children, has now spread to pets. You got it, folks—some of your clients may firmly believe that vaccines cause autism in their pets and may refuse lifesaving inoculations. (And if you're like me, you didn't need Slate.com to tell you this was a thing.)

How can you promote the health and safety of your patients when their owners' decisions to refuse vaccines threaten herd health? And how do you reason with clients who insist on the harmful effects of vaccines against overwhelming evidence to the contrary?

Because many anti-vaxxer veterinary clients are driven by fear (and can't we all relate to some irrational fears?), it can be difficult or even impossible to convince them to vaccinate. However, some clients may change their minds about vaccines if you approach them in a consistent, empathetic way. If you are running up against this, here are eight tips that have helped me.

TRY THIS SCRIPT ON FOR SIZE

Here's an example of how this conversation can work:

You: Bella is due for her vaccines.

Client: I don't want to have Bella vaccinated today.

You: Can you tell me your main concern with vaccination?

Client: I'm just not interested.

(This is when you need to finesse this conversation a little to get the client to open up.)

You: No pressure at all. I really just want to know what your concerns are so we can do the best thing for your pet.

(Client may get squirmy or evasive.)

Client: Well, I read that vaccines can cause autism.

You: Thanks for telling me, and that's a valid concern.

(Client usually appears surprised and relieved at this point.)

You: You aren't the only person who has heard that. When I heard about the study, I researched it myself, because I was worried about my pets. What I found is that the British study that linked autism to vaccines, the one that scared all the parents, was retracted about six years ago because the study was proven false. The CDC has published a resource center that goes into great detail about the safety of vaccines if you'd like more information.

Infectious disease control represents a major part of our effort as your pet's health-care providers. Vaccines are better studied than any other medicine we prescribe, and the manufacturers guarantee their safety and efficacy.

The vaccines we recommend are the vaccines we think your pet needs. I made sure my pet got these vaccines, and if Bella were my pet, I would be getting these vaccines for her to make sure she is as safe and healthy as she can be. Is that OK?

(Hopefully, at this point the client nods head and smiles. She might even say ...)

Client: Thank you for explaining that. And not thinking I was crazy.

You: Of course. I know you want the best for your pet. You and I want the same thing. It's my job to help you with these concerns.

Result: A pet gets a vaccine and a fairy gets her wings.

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I like to vaccinate pets

Preventing disease is a primary goal for veterinary practitioners. It's time to better explain why they're important to pet owners and make it as easy as possible on pets. (Low-volume vaccines, anyone?)

By Andrew Rollo, DVM

Find more about vaccine communication, practice protocols and other tips at dvm360.com/vaccinestoolkit.

Nobody likes getting a shot. But do you like herd immunity and disease prevention? Yeah, me too.

I like to prevent, I like to vaccinate. And given how effective vaccines are, I'm always confused why some pets have to go through a terrible illness—some dying—and putting humans at risk, all while a simple vaccine could have prevented it. I practice in an endemic area, and there are still practices that haven't made the leptospirosis vaccine part of their core vaccines. Then I'll be at a meeting and hear some talk about having an outbreak, and all I can think is, Why? I also live in an area that's currently dealing with a human measles outbreak. Come on!

I like to prevent, I like to vaccinate. Vaccines today from reputable manufacturers have very low reaction rates. This isn't your grandpa's breeder's leptospirosis vaccine that they still warn new puppy owners about. I have no problem giving six vaccines to a dog under 5 pounds. My whole career I've used 1-mL vaccines. The trick with clients is always to explain the importance of these vaccines. Once clients understand the importance of the vaccines and agree, many are surprised in the exam room that their pet just received them. Using Fear Free techniques, as I talk, the dog is chowing down on soft treats, soft crackers, marshmallows or cereal and has no idea they've even been poked several times. For cats, no problem—the nice-smelling shrimp or salmon treats do the trick.

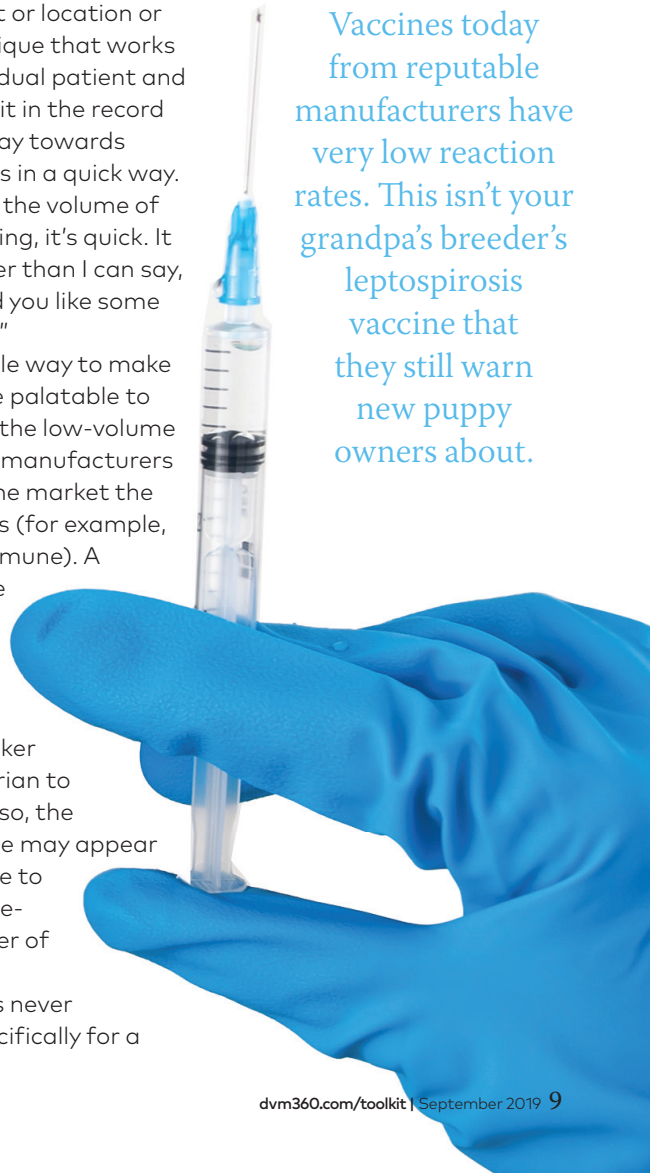
Now I can't promise treats work for every pet—for me, it's about 50/50—and some get wise to my tricks after a visit or two. But finding the right treat or location or holding technique that works for that individual patient and documenting it in the record goes a long way towards giving vaccines in a quick way. Regardless of the volume of vaccine I'm using, it's quick. It takes no longer than I can say, "Buddy, would you like some spray cheese?"

One possible way to make vaccines more palatable to pet owners is the low-volume vaccines that manufacturers have put on the market the past few years (for example, Elanco's Duramune). A 0.5mL vaccine is less volume to give. A smaller volume could be a little quicker for a veterinarian to administer. Also, the smaller volume may appear less worrisome to the client, especially the owner of a smaller pet.

A client has never asked me specifically for a low-volume vaccine, but if compliance is an issue for you, other doctors in your hospital or your clients, giving a low-volume vaccine could increase that compliance.

It's worth exploring. Like I said before, I like to prevent, I like to vaccinate.

Vaccines today from reputable manufacturers have very low reaction rates. This isn't your grandpa's breeder's leptospirosis vaccine that they still warn new puppy owners about.



RODIMOVPAVEL/ADOBESTOCK.COM

Feline injection-site sarcomas update

Though still often called vaccine-associated fibrosarcoma, it is now known that many types of injections can cause this aggressive form of neoplasia in cats. Monitoring injection sites is key to a good prognosis, as is an optimal treatment protocol.

By Sandra Bechtel, DVM, DACVIM (oncology)

SEBASTIAN KAULITZKI/ADOBESTOCK.COM

Feline injection-site sarcomas (ISSs) are distinct from soft tissue sarcomas that develop unrelated to injections because of their etiology and extremely aggressive invasion into surrounding tissues. Although ISSs have an overall low incidence, achieving disease control can be challenging. And while ISSs were initially described at the sites of vaccines, other reported causes of ISSs include injection sites of microchips, long-acting antibiotics, long-acting glucocorticoids and lufenuron, plus reaction sites to nonabsorbable sutures.[1]

Initial preventive measures

Given the need for wide surgical margins and subsequent difficulty in achieving control of interscapular ISS with surgery, the Vaccine-Associated Feline Sarcoma Task Force (VAFSTF) published the following recommendations in 1999 for vaccine administration[2]:

- Rabies vaccine: Right rear limb, as distal as possible
- Feline leukemia virus (FeLV) vaccine: Left rear limb, as distal as possible
- Other vaccinations: Right forelimb, as distal as possible

Since publication of these recommendations, the prevalence of ISSs has not changed,[3] but diagnosis of ISS in the subcutaneous tissue of the pelvic limbs, lateral abdomen and thoracic limbs has increased while ISS in the interscapular

region has decreased. Of particular note is the increase in lateral abdominal wall ISSs, which is hypothesized to be due to aberrant injection (vaccination intended for the pelvic limb).[4]

The VAFSTF also recommends that veterinarians and clients monitor any vaccine site, being sure to investigate when a lesion meets any one of the following criteria, called the 3-2-1 rule[2]:

- Persistence after 3 months post-injection
- Size larger than 2 cm at any time point
- Increase in size 1 month following injection

Investigation should include either Tru-Cut or wedge biopsy, ensuring that any subsequent surgery is not extended by the biopsy location and technique. Marginal excision and excisional biopsy are not appropriate for ISSs.

Staging

A minimum database is useful to assess a patient's overall health. Three-view thoracic radiographs are also an important staging tool, as most ISSs are high-grade sarcomas with a reported metastatic rate of up to 25%, most commonly to the lungs. Metastasis to the subcutaneous tissue, liver and lymph nodes has also been reported, so abdominal imaging—ultrasound or computed tomography (CT)—is appropriate in some cases.[1-5]

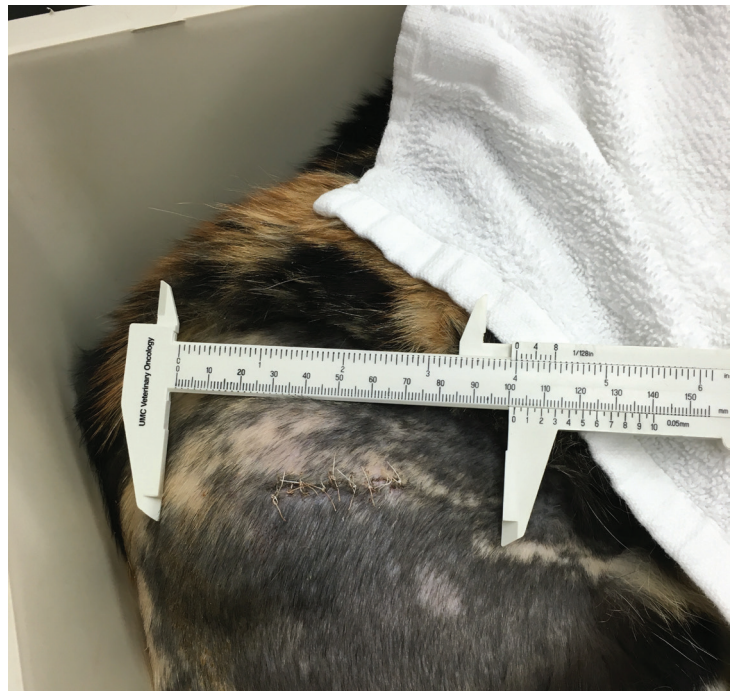


Figure 1. An injection site sarcoma of the proximal right thigh after an incisional biopsy. (Figures courtesy of Dr. Sandra Bechtel)

While soft tissue sarcomas are considered locally invasive tumors in general, ISSs are extremely invasive. Often, the mass palpable on physical examination represents only a small portion of the tumor itself. Advanced imaging using CT or magnetic resonance imaging (MRI) is essential in all cases of ISS to determine the extent of invasion and plan adequate surgical margins (Figures 1 and 2).[5]

Treatment

Surgery. ISSs are poorly encapsulated and extend along and infiltrate fascial planes, so referral with advanced imaging is optimal. When measured with contrast CT, tumor volume is approximately double the measurements from physical examination.[5] If marginal resection is performed, the median time to recurrence is 66 to 79 days, with recurrence rates over 69%. However, when radical excision involving 5-cm margins without further therapy was

Figure 2. A contrast CT image of the cat in Figure 1. The coronal view revealed a moderately circumscribed and irregular mass extending into the abdominal wall.

performed in one retrospective study, the recurrence rates were 14%. In this same study, the median survival time in cats without recurrence was 1,461 days, while the median survival time in cats with recurrence was 499 days.[6,7] This underscores the importance of an aggressive resection by a board-certified surgeon, as this offers the best chance for local control of ISSs. It is also important to note that radical surgical excision at the time of the first surgery imparts a better prognosis (improved disease-free intervals and survival times) compared with radical excision for recurrent tumors.[8]

The location of ISSs plays an important role in the ability to achieve tumor control. ISSs of the distal limb, for example, can be controlled in many cases by amputation. However, ISSs of the thoracic or abdominal wall or of the interscapular region require much more invasive surgeries to achieve the desired surgical margins.

Radiation. Radiation therapy is commonly used preoperatively or postoperatively to increase the disease-free interval in cats with ISSs, as incomplete tumor margins are common.[9]

Chemotherapy. The role of chemotherapy has not yet been defined and is generally reserved for cats in which surgery, radiation therapy or both are not available. The overall response rate to single-agent doxorubicin in cats with a palpable tumor is 33%[10] and to single-agent ifosfamide is 41%.[11] However, the median time to progression after administering either chemotherapeutic is short, ranging from 70 to 84 days. The role of chemotherapy in delaying or decreasing metastatic disease has yet to be defined.

Immunotherapy. Immunotherapy using a recombinant canary pox virus expressing feline interleukin-2 has been investigated for use in cats after surgery and radiation therapy, if the initial tumor was less than 5 cm.[12] This therapy holds promise as an adjunctive treatment with the goal of improving local disease control.

The take-homes

Even though the incidence is low, ISSs are frustrating to treat and are often found when they are already large and difficult to control. And

ISSs can be life limiting. Vaccinating according to VAFSTF guidelines can be helpful, in that cats developing ISSs may have a location more amenable to aggressive surgery (such as amputation), affording longer-term control. Increasing client awareness and implementing the 3-2-1 rule of monitoring post-vaccination may allow earlier detection and, therefore, improved results with therapy. Recommended treatment includes staging, advanced imaging and the first surgery being performed by a board-certified surgeon. Most cats with ISSs will also benefit from follow-up radiation therapy.

The role of chemotherapy is undefined. Immunotherapy with recombinant canary pox virus expressing feline interleukin-2 shows promise when used in combination with surgery and radiation therapy for small (less than 5 cm) ISSs. The most important aspects of treatment for ISSs are early identification of disease, advanced imaging and surgery at a referral institution.

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Sandra Bechtel, DVM, DACVIM (oncology), is an associate professor of medical oncology at the University of Missouri's Veterinary Health Center. Her clinical interests include quality-of-life-focused cancer care and cancer diagnosis and therapy.

The *future* of Lyme decline is in mice's paws

Immunizing mice via vaccine-laced food may slow the spread of Lyme disease in humans and animals, experts say.

According to a recent report in *Scientific American*, the latest bit of hope in reducing the number of Lyme infections comes in a tiny, whiskered form. Connecticut's state entomologist, Kirby Stafford, believes in a new strategy he's been testing: immunizing mice via vaccine-laced food.

The bacteria that causes Lyme disease, *Borrelia burgdorferi*, is picked up by roughly half of ticks via white-footed mice, the article states. Because of that, Stafford says the mice are the most important carriers of the bacteria, and a prime target for a Lyme vaccine. He theorizes the number of ticks that acquire *Borrelia* in the first place should lower with enough mice vaccinated—which means fewer infected humans by the end of the process.

After the fallout from a successful, but potentially side-effect-causing human Lyme vaccine in the late '90s, Maria Gomes-Solecki, DVM, an immunologist at the University of Tennessee, set out to find another alternative. The human vaccine, LYMErix, was based on a protein called outer surface protein A (OspA), found on the surface of *Borrelia* bacteria, according to the report. In essence, the tick would bite the vaccinated human, and the blood would also destroy the *Borrelia* inside the tick, preventing further infection.

In the report, Dr. Gomes-Solecki claims she'd always been fascinated by the science around Lyme disease. "With my background being veterinary medicine," she says in the report, "I started thinking, 'If we can't use [the vaccine] in humans, maybe we can target the animals that cause the illness.'"

Dr. Gomes-Solecki's theory was tested by a team of Yale University scientists in 2004, according to the article. And, while it proved effective on the rodents they tested on, it was impractical, mainly due to the process. "It's incredibly laborious," says Joyce Sakamoto, PhD, a tick biologist at Pennsylvania State University, in the article. "Animals sometimes die in traps; that doesn't help. Injections are very difficult."

To combat the fact that needles wouldn't make a dent in the Lyme epidemic, Dr. Gomes-Solecki came up with something that could be broadcast into the environment like seeds, according to the report. She presented a kibble that contains an oral vaccine—something that white-footed mice would still find tasty.

"It's our secret sauce, if you will," says Mason Kauffman, a spokesperson with US BIOLOGIC, the company Dr. Gomes-Solecki helped found to manufacture the new vaccine, according to the article. Kauffman likens the vaccine to a peanut M&M, saying, "The 'chocolate coating' around the peanut is the vaccine, then the 'candy coating' … is a coating that protects the vaccine from stomach acids."

According to the report, Dr. Gomes-Solecki tested the kibble vaccine from 2007 to 2011 using seven fields, each roughly the size of a football field. To capture and study

STAN/ ADOBE STOCK.COM

A look at the data

The results of Dr. Gomes-Solecki's study were published in 2014, according to the report. Marm Kilpatrick, PhD, a disease ecologist at the University of California, Santa Cruz, says the results are "encouraging but also a bit puzzling," in the article. "You should see the steady decline from year to year," he continues. "The slight challenge of that is the data don't completely support that going on."

Dr. Kilpatrick notes that where data from two fields that the vaccine was used in shows a steady decline, data from a different vaccinated field showed no effect until the third year of the experiment, according to the report. "It falls to 13 or 14 percent [from 55 percent], which is awesome and fantastic," he says, but adds that the fluctuating numbers give him pause since the unvaccinated fields showed significant variations from year to year.

To combat that, a sustainable decline in Lyme prevalence was evident when averaging all fields that had the vaccine together, Dr. Gomes-Solecki says in the report. Dr. Kilpatrick, in any case, remains optimistic about the vaccine's future. "I think this study design represents the lower estimate of [the vaccine's] efficacy," he says.

the local mice, she set box traps in each field and put the vaccine inside the traps in four of the fields. In that time, the prevalence of infected ticks in some of the fields had dropped by 76 percent. In the fields without the vaccine, however, the prevalence had risen by 94 percent.

"[The results] were massive," Dr. Gomes-Solecki says in the report. "If we could see that in deployment, it would be incredible. I thought, 'Yes, maybe—maybe this could work.'"

The kibble vaccine could become the ultimate solution for Lyme disease. However, Dr. Kilpatrick says there are likely two things standing in the way of that, according to the article. The first deals scientifically with the animals themselves: Shrews, chipmunks and birds also carry Lyme bacteria and can transfer them to ticks as well—however, the vaccine targets only white-footed mice.

The second is more social. "For reasons that are not clear," says Dr. Kilpatrick in the report, "mosquito control is usually done by county or state health departments, where tick control is not. The result of that is it's beholden upon you and I, as the lay public, to do our own control of ticks."

> "If we can't use [the vaccine] in humans, maybe we can target the animals that cause the illness."
>
> —Dr. Gomes-Solecki

The trickiest part of all? Getting said public on board. Unless there is a concerted effort to deploy the vaccine, Dr. Kilpatrick says in the article, it will hardly make a difference, even if the mouse vaccine works spectacularly. "The reason why we don't do it is because people are scared or lazy or both—and then it just doesn't get done," he says in the report.

Practice tip: Up your *Bordetella* compliance

Get your veterinary clients on board with a necessary *Bordetella* vaccination with a simple explanation.

By James Randolph, DVM

How many times have you heard, "Oh! Rover doesn't need the Bordello. He doesn't board."

After years of explaining to pet owners that *Bordetella* "isn't that kind of 'board,'" and still having people reject a very important aspect of disease protection, I had an epiphany.

About three years ago, I began calling it "*Bordetella bronchiseptica*, a bacterial infection," and immediately launching into a brief explanation of its part in infectious tracheobronchitis and possible complications.

Acceptance of the vaccination is now well over 95 percent.

AFRICA STUDIO/ ADOBE STOCK.COM

Grab those kitten vaccines!

Kittens need shots. Full stop. Start early with veterinary client education about their importance with this printable PDF.


YOUR NEW KITTEN

VACCINES save kittens' LIVES

Back to basics: What's a vaccine?

The history starts with an epidemic of smallpox, which killed millions of people. In 1796, a physician named Edward Jenner noticed that the milk maids, who were routinely exposed to cowpox, did not get sick with smallpox. He wondered whether their exposure to cowpox protected them—and the idea of vaccination was born. A vaccine exposes the immune system to inactive or incomplete disease-causing agents to trick the immune system to quickly and effectively respond when exposed to the real thing.

If we expose cats to vaccines, if and when their immune systems face the real disease, they can fight it more easily. Think of vaccination like a training gym where athletes prepare their bodies and minds for actual competition.

Which vaccines does my kitten need?

When a disease is widespread, dangerous—or both—researchers develop a vaccine against it. Vaccination choices are based on an individual kitten's lifestyle and risk factors. Your veterinary team can tell you which vaccines are appropriate and how they can be given.

Why does my kitten need to repeat vaccines ("boosters")?

We know that an immune system "remembers" diseases from vaccines, but we don't know how long the memory is for each individual animal. Be-

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YOUR NEW PUP

Why vac

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Vaccines got a bad rap in human medicine with the kids' autism scare, so maybe some of that found its way into your exam room with worried pet owners who demanded to know whether all those vaccines are really necessary. (See page 6 for some examples)

"You just trying to up-sell us?" says a skeptical cat owner.

"Aren't too many vaccines a bad thing?" says the owner of a new kitten.

But cats are a different story, because feline vaccine-associated sarcomas (now more precisely renamed feline injection-site sarcomas) were a real thing. Experts always agreed, however, that the danger of feline diseases outweighed the risk of sarcomas.

Now here's a free printable client handout to start the conversation about kitten and cat vaccines. Scan the code (left) to download it now.

To download the handout, scan the code or visit **dvm360.com/vaccinestoolkit**.

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h individual animal. Because we don't want to
with protection, veterinarians and other medical
professionals believe it's far better to vaccinate too often than not enough.

While puppies receive some immune protection from their mother after they're born, that doesn't last for a dog's entire puppyhood. Eventually, puppies need to develop their own protection, and that's where vaccines come in. Since maternal immunity can interfere with the effectiveness of vaccines, we repeat them to make sure they're present when the puppy's own immune system takes over. This timeline varies between individual dogs, so we follow guidelines to protect as many puppies as possible.

Are vaccines safe?

Vaccines have been accused of being dangerous. There is no scientific evidence to support these claims for dogs. Vaccination has saved innumerable lives, both human and animal. There are isolated cases of allergic reactions, but these are rarely life-threatening when treated appropriately. It is important, however, that puppies not be randomly vaccinated outside of published recommendations. Vaccines are not one-size-fits-all and should be tailored to the individual puppy.

Source: Kathryn Primm, DVM

ATTARAWIMONCHAI/SHUTTERSTOCK.COM

Why puppies need vaccines

We know that vaccines train the immune system to react quickly to certain diseases. Let veterinary clients with new puppies know all about how awesome vaccination is in this printable PDF client handout.

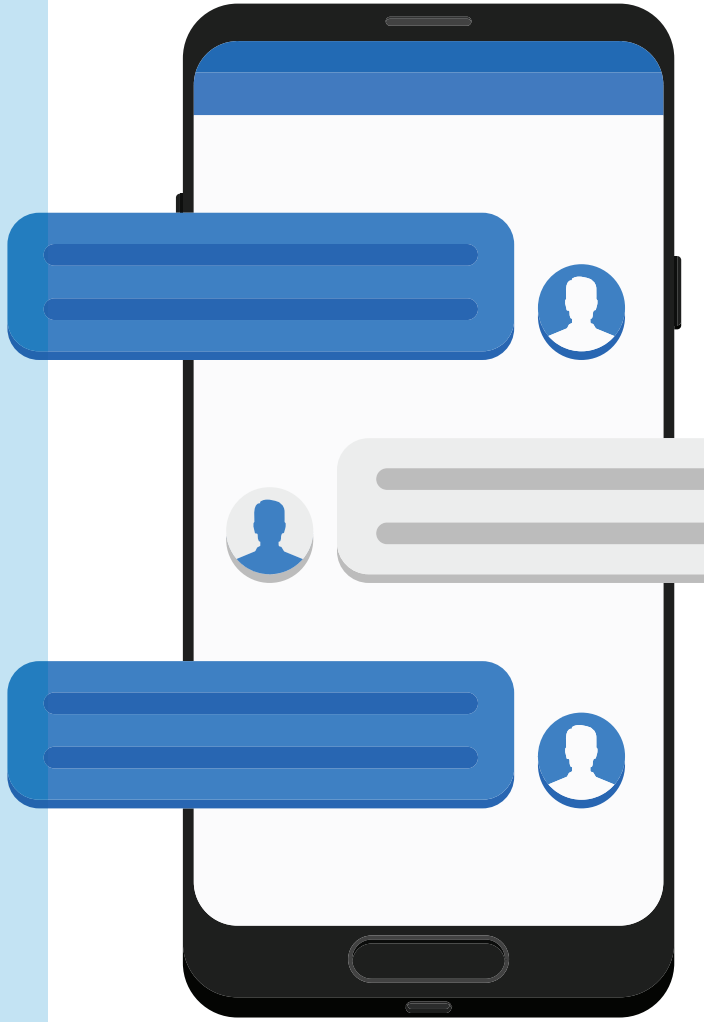
For your veterinary hospital's "new puppy" packet, check out this client handout. It'll cover what vaccines are, why they're needed for pets in general and why they're especially good for puppies.

These handouts were produced by Kathryn Primm, DVM, a regular contributor to dvm360.com. Read more from Dr. Primm at dvm360.com/primm.

To download the handout, scan the code or visit **dvm360.com/vaccinestoolkit**.

Social media posts about the importance of pet vaccinations

In an era of parents sensitive to the issue of children's vaccines, these social media posts can explain the importance of pet vaccinations to veterinary clients.



DID YOU KNOW?
Even though most cases of **rabies** are found in wild animals, the majority of Americans who receive post-exposure preventive shots are exposed due to close contact with a domestic animal, according to the Centers for Disease Control.

Even if your pet stays mostly indoors, many contagious **diseases are airborne and could even travel through an open window**, says the American Humane Association—so regular vaccinations are crucial regardless of whether your pet goes outside.

FACT: If your pet is bitten by a wild animal and isn't current with a rabies vaccine, it may need to be euthanized. Keep this heart-wrenching situation hypothetical and vaccinate your pet today.

Disease immunity inherited by puppies and kittens thanks to their **mothers' antibodies typically wears off at around 8 weeks of age**. Since young animals' immune systems are still fragile at that stage, it's better to vaccinate your pet sooner rather than later.

Adverse reactions to pet vaccinations are uncommon and usually mild and short-term. Reduced appetite, fever and swelling at the injection site are **possible but unlikely**. Protecting your pet and family from potentially fatal diseases makes vaccinating worth the slight risk.

Distemper is a serious and contagious viral illness with no known cure, usually causing high fever, coughing, vomiting and diarrhea, among other clinical signs, in both dogs and cats—but this can easily be avoided by staying on top of your pet's vaccinations.

If your dog **frequents the park, day care or kennel**, there's a much higher risk of contracting kennel cough and other contagious diseases. Keep your pets up to date on their vaccinations!

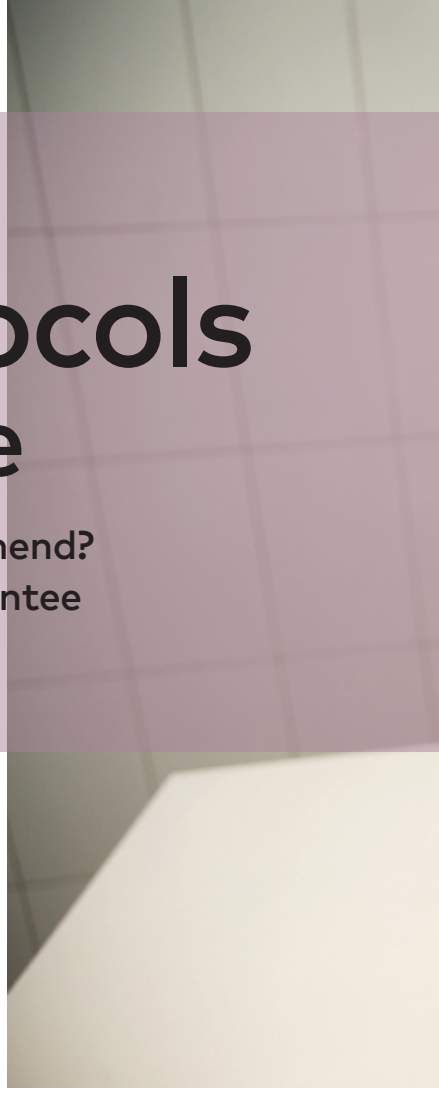
More than three-fourths of all respiratory infections in cats are caused by feline rhinotracheitis or calicivirus. These can cause cold-like clinical signs, pneumonia or other severe signs and are **easily transmitted** among cats through secretions. The good news: they can be prevented with regular vaccinations.

If you brought in your kitten or puppy for its first vaccinations—that's great! **You're on the right path to fantastic pet health** and many years with your furry friend. But don't forget to come back for boosters—otherwise, your pet won't be fully protected from disease, which is especially dangerous for vulnerable young immune systems.

Consistent vaccine protocols in your practice

Do you know what your doctors recommend? Are clients confused? Here's how I guarantee everyone is on the same page.

By Rob Graham, CVT



When I first joined Animal Health Services as practice manager, I immediately noticed the lack of protocols for vaccines amongst the six doctors on staff. One doctor recommended a three-year vaccine, and another said every year. One doctor even recommended no vaccines at all. The practice charged me with helping to correct this major issue.

A whole team approach

As you might imagine, talking to each doctor individually about vaccine protocols ruffled some feathers. Everyone had an opinion about a protocol, but no two opinions were the same. After I gathered information as to what protocols each doctor was recommending, I was ready to have a big "family talk." I presented my findings to all of the doctors as a group. We discussed the fact that we were confusing clients who might see different veterinarians at different appointments. We weren't following the manufacturers' recommendations in giving vaccines. Worst of all, some clients were only getting reminders from the practice every three years. The protocol disagreement wasn't just bad for business—it was bad for patients. A lot can go wrong in three years.

After getting the doctors to agree that we needed to fix this issue, we started on the tough job of crafting a uniform protocol. My senior veterinarians were the most difficult because, as we all know, old school vets can be set in their ways. Voices were raised on more than one occasion during these discussions. I finally gathered the discussed protocols, put them all together into one cohesive protocol and presented the document at a meeting two weeks later to get input. It wound up taking six months, but we did it.

VICKYRANDOM/ ADOBESTOCK.COM

Hard work paid off

Developing this protocol was definitely a challenge, but a challenge we all understood we needed to face. I've always said you can put 10 veterinarians in a room and get 10 different opinions on a case. The most important thing for me was to convince them that this process was going to help provide better medicine for patients and better service for clients.

The unexpected bonus of all this work was, we established a blueprint to solve other major problems in the hospital. We used the same approach on such issues as therapeutic diets to recommend, heartworm preventives to carry, etc. It also helped us learn to work together and to understand and respect each other on a deeper level.

I would strongly recommend that practice owners and practice managers take a look at their practice's protocols. Are your doctors and team sending a consistent message? Are you providing a high level of service while also providing a high level of preventive care? Does everyone follow the same hospital protocols? If not, I challenge you to correct it. This is how we did it.

Rob Graham, CVT, is practice manager at Animal Health Services in Cave Creek, Arizona.

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- **Minimize reactions associated with unwanted protein and debris**
- **Reduce discomfort**

Always read, understand and follow the label and use directions.

Elanco™

We celebrate superhero techs!

Banfield PET HOSPITAL | NATIONAL VETERINARY TECHNICIAN WEEK 2019

Giving vet techs the internet "frame" they deserve

You've probably seen "profile frames" floating around on Facebook. You know, the ones that frame your profile photo, allowing your followers to help you celebrate important moments, favorite holidays, and show support for special causes. Here at dvm360.com, we wanted to help the world recognize veterinary technicians on social media—and so we created these downloadable "frames" that allow anyone to upload and add to their Facebook profiles. Let's spread the word about the superhero techs around the world, and show our support during National Veterinary Technician Week!

SPAY IT ISN'T SO

From Hilal Dogan, BVSc, CCTP

I was doing a spay on an overweight bully-type breed. Everything was so slippery due to the oiliness. I was ligating vessels and was struggling to keep tissues stable. I started to panic slightly, and there were no other DVMs in the building I could ask to help me. I called one of the most experienced techs over and she assisted me with finishing.

Not only did her extra set of hands help me finish the job, but she was extremely encouraging the entire time. She would say, "You got this, you can do it!" repeatedly, and she actually knew how to do spays and understood the anatomy, which was a bonus I wasn't expecting! After struggling by myself for what felt like an eternity, as soon as she stepped in to help, we finished the surgery at lightning speed.

I also love it when techs happily do things I hate doing. For me that is ripping out broken toenails, lancing abscesses (yeah, yeah, I know I'm "that" vet) and wrangling fractious animals! I don't know what I would do without my techs.

EUGENIO MARONGIU/ADOBE STOCK

IT'S THE LITTLE THINGS THAT MEAN THE MOST

From Danielle T. Russ, LVT

There are a million little things our LVTs do every day that really stand out to me. Here are just a few:

- holding the door for a client, rushing to help them inside with a cat carrier or excited dog
- ensuring a comfortable, inviting, warm environment with tissues ready for difficult times with our patients and clients
- sitting with a client while they grieve—sometimes providing words of peace and at other times just sitting with them as they cry
- issuing follow-up calls and answering questions as many times as it takes for our clients to be comfortable with the plan
- providing extra time and TLC to our anxious patients
- investing in expanding their knowledge and skills so they can be their best for their patients and clients
- sharing their knowledge and skills with their teammates

These actions may seem insignificant, but they are far from it. These are the things clients, patients and team members remember because it leaves a lasting feeling of kindness, compassion, empathy, understanding and warmth.

Mobility is our Mantra.

ANTINOL®, *the supplement for joint comfort and mobility*

- ANTINOL's active ingredient, PCSO-524®, is a naturally occurring fatty acid group from the indigenous New Zealand Green-lipped Mussel.
- A patented extraction and manufacturing process prevents auto-oxidation of fats and keeps their beneficial properties intact.
- Safe for long-term daily use.

Enhanced mobility seen in dogs in as little as 2 weeks![1]

For more information, ask your Boehringer Ingelheim sales representative or visit www.Antinolforpets.com

[1] Data on file.

Boehringer Ingelheim

Antinol®

Brief Summary
NADA 141-213, Approved by FDA

Metacam®

(meloxicam oral suspension)
1.5 mg/mL (equivalent to 0.05 mg per drop) /0.5 mg/mL (equivalent to 0.02 mg per drop)
Non-steroidal anti-inflammatory drug for oral use in dogs only

Caution: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

Warning: Repeated use of meloxicam in cats has been associated with acute renal failure and death. Do not administer additional injectable or oral meloxicam to cats. See Contraindications, Warnings, and Precautions for detailed information.

Description: Meloxicam is a non-steroidal anti-inflammatory drug (NSAID) of the oxicam class. Each milliliter of METACAM Oral Suspension contains meloxicam equivalent to 0.5 or 1.5 milligrams and sodium benzoate (1.5 milligrams) as a preservative. The chemical name for Meloxicam is 4-Hydroxy-2-methyl-N-(5-methyl-2-thiazolyl)-2H-1,2-benzothiazine-3-carboxamide-1, 1-dioxide. The formulation is a yellowish viscous suspension with the odor of honey.

Indications: METACAM Oral Suspension is indicated for the control of pain and inflammation associated with osteoarthritis in dogs.

Contraindications: Dogs with known hypersensitivity to meloxicam should not receive METACAM Oral Suspension. **Do not use METACAM Oral Suspension in cats. Acute renal failure and death have been associated with the use of meloxicam in cats.**

Warnings: Not for use in humans. Keep this and all medications out of reach of children. Consult a physician in case of accidental ingestion by humans. **For oral use in dogs only.**

As with any NSAID all dogs should undergo a thorough history and physical examination before the initiation of NSAID therapy. Appropriate laboratory testing to establish hematological and serum biochemical baseline data is recommended prior to and periodically during administration. Owner should be advised to observe their dog for signs of potential drug toxicity and be given a client information sheet about METACAM.

Precautions: The safe use of METACAM Oral Suspension in dogs younger than 6 months of age, dogs used for breeding, or in pregnant or lactating dogs has not been evaluated. Meloxicam is not recommended for use in dogs with bleeding disorders, as safety has not been established in dogs with these disorders. As a class, cyclo-oxygenase inhibitory NSAIDs may be associated with gastrointestinal, renal and hepatic toxicity. Sensitivity to drug-associated adverse events varies with the individual patient. Dogs that have experienced adverse reactions from one NSAID may experience adverse reactions from another NSAID. Patients at greatest risk for renal toxicity are those that are dehydrated, on concomitant diuretic therapy, or those with existing renal, cardiovascular, and/or hepatic dysfunction. Concurrent administration of potentially nephrotoxic drugs should be carefully approached. NSAIDs may inhibit the prostaglandins that maintain normal homeostatic function. Such anti-prostaglandin effects may result in clinically significant disease in patients with underlying or pre-existing disease that has not been previously diagnosed. Since NSAIDs possess the potential to induce gastrointestinal ulcerations and/or perforations, concomitant use with other anti-inflammatory drugs, such as NSAIDs or corticosteroids, should be avoided. If additional pain medication is needed after administration of the total daily dose of METACAM Oral Suspension, a non-NSAID or non-corticosteroid class of analgesia should be considered. The use of another NSAID is not recommended. Consider appropriate washout times when switching from corticosteroid use or from one NSAID to another in dogs. The use of concomitantly protein-bound drugs with METACAM Oral Suspension has not been studied in dogs. Commonly used protein-bound drugs include cardiac, anticonvulsant and behavioral medications. The influence of concomitant drugs that may inhibit metabolism of METACAM Oral Suspension has not been evaluated. Drug compatibility should be monitored in patients requiring adjunctive therapy.

Adverse Reactions: Field safety was evaluated in 306 dogs.[1] Based on the results of two studies, GI abnormalities (vomiting, soft stools, diarrhea, and inappetance) were the most common adverse reactions associated with the administration of meloxicam.

The following adverse events are based on post-approval adverse drug experience reporting. Not all adverse reactions are reported to FDA/CVM. It is not always possible to reliably estimate the adverse event frequency or establish a causal relationship to product exposure using these data. The following adverse events are listed in decreasing order of frequency by body system.

Gastrointestinal: vomiting, anorexia, diarrhea, melena, gastrointestinal ulceration
Urinary: azotemia, elevated creatinine, renal failure
Neurological/Behavioral: lethargy, depression
Hepatic: elevated liver enzymes
Dermatologic: pruritus

Death has been reported as an outcome of the adverse events listed above. **Acute renal failure and death have been associated with use of meloxicam in cats.**

Information for Dog Owners: METACAM, like other drugs of its class, is not free from adverse reactions. Owners should be advised of the potential for adverse reactions and be informed of the clinical signs associated with drug intolerance. Adverse reactions may include vomiting, diarrhea, decreased appetite, dark or tarry stools, increased water consumption, increased urination, pale gums due to anemia, yellowing of gums, skin or white of the eye due to jaundice, lethargy, incoordination, seizure, or behavioral changes. **Serious adverse reactions associated with this drug class can occur without warning and in rare situations result in death (see Adverse Reactions). Owners should be advised to discontinue METACAM and contact their veterinarian immediately if signs of intolerance are observed.** The vast majority of patients with drug related adverse reactions have recovered when the signs are recognized, the drug is withdrawn, and veterinary care, if appropriate, is initiated. Owners should be advised of the importance of periodic follow up for all dogs during administration of any NSAID.

Effectiveness: The effectiveness of meloxicam was demonstrated in two field studies involving a total of 277 dogs representing various breeds, between six months and sixteen years of age, all diagnosed with osteoarthritis. Both of the placebo-controlled, masked studies were conducted for 14 days. All dogs received 0.2 mg/kg meloxicam on day 1. All dogs were maintained on 0.1 mg/kg oral meloxicam from days 2 through 14 of both studies. Parameters evaluated by veterinarians included lameness, weight-bearing, pain on palpation, and overall improvement. Parameters assessed by owners included mobility, ability to rise, limping, and overall improvement. In the first field study (n=109), dogs showed clinical improvement with statistical significance after 14 days of meloxicam treatment for all parameters. In the second field study (n=48), dogs receiving meloxicam showed a clinical improvement after 14 days of therapy for all parameters; however, statistical significance was demonstrated only for the overall investigator evaluation on day 7, and for the owner evaluation on day 14.[1]

Reference: 1. FOI for NADA 141-213 METACAM (meloxicam oral suspension).

Manufactured for:
Boehringer Ingelheim Vetmedica, Inc.
St. Joseph, MO 64506 U.S.A.

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Revised 07/2016

18490
06/2018

Brief Summary
NADA 141-219, Approved by FDA

Boehringer Ingelheim

Metacam®

(meloxicam)
5 mg/mL Solution for Injection
Non-steroidal anti-inflammatory drug for use in dogs and cats only

Caution: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

Warning: Repeated use of meloxicam in cats has been associated with acute renal failure and death. Do not administer additional injectable or oral meloxicam to cats. See Contraindications, Warnings, and Precautions for detailed information.

Description: Meloxicam is a non-steroidal anti-inflammatory drug (NSAID) of the oxicam class. Each mL of this sterile product for injection contains meloxicam 5.0 mg, alcohol 15%, glycofurol 10%, poloxamer 188 5%, sodium chloride 0.6%, glycine 0.5% and meglumine 0.3%, in water for injection, pH adjusted with sodium hydroxide and hydrochloric acid.

Indications:
Dogs: METACAM (meloxicam) 5 mg/mL Solution for Injection is indicated in dogs for the control of pain and inflammation associated with osteoarthritis.

Contraindications: Dogs with known hypersensitivity to meloxicam should not receive METACAM 5 mg/mL Solution for Injection.

Warnings: Not for use in humans. Keep this and all medications out of reach of children. Consult a physician in case of accidental ingestion by humans. For IV or SQ injectable use in dogs. All dogs should undergo a thorough history and physical examination before administering any NSAID. Appropriate laboratory testing to establish hematological and serum biochemical baseline data is recommended prior to, and periodically during use of any NSAID in dogs.

Owner should be advised to observe their dogs for signs of potential drug toxicity.

Precautions: The safe use of METACAM 5 mg/mL Solution for Injection in dogs younger than 6 months of age, dogs used for breeding, or in pregnant or lactating bitches has not been evaluated. Meloxicam is not recommended for use in dogs with bleeding disorders, as safety has not been established in dogs with these disorders. Safety has not been established for intramuscular (IM) administration in dogs. When administering METACAM 5 mg/mL Solution for Injection, use a syringe of appropriate size to ensure precise dosing. As a class, cyclo-oxygenase inhibitory NSAIDs may be associated with gastrointestinal, renal and hepatic toxicity. Sensitivity to drug-associated adverse events varies with the individual patient. Dogs that have experienced adverse reactions from one NSAID may experience adverse reactions from another NSAID. Patients at greatest risk for renal toxicity are those that are dehydrated, on concomitant diuretic therapy, or those with existing renal, cardiovascular, and/or hepatic dysfunction. Concurrent administration of potentially nephrotoxic drugs should be carefully approached. NSAIDs may inhibit the prostaglandins that maintain normal homeostatic function. Such anti-prostaglandin effects may result in clinically significant disease in patients with underlying or preexisting disease that has not been previously diagnosed. Since NSAIDs possess the potential to induce gastrointestinal ulcerations and/or perforations, concomitant use with other anti-inflammatory drugs, such as NSAIDs or corticosteroids, should be avoided. If additional pain medication is needed after the administration of the total daily dose of METACAM Oral Suspension, a non-NSAID or noncorticosteriod class of analgesia should be considered. The use of another NSAID is not recommended. Consider appropriate washout times when switching from corticosteroid use or from one NSAID to another in dogs. The use of concomitantly protein-bound drugs with METACAM 5 mg/mL Solution for Injection has not been studied in dogs. Commonly used protein-bound drugs include cardiac, anticonvulsant and behavioral medications. The influence of concomitant drugs that may inhibit metabolism of METACAM 5 mg/mL Solution for Injection has not been evaluated. Drug compatibility should be monitored in patients requiring adjunctive therapy. The effect of cyclo-oxygenase inhibition and the potential for thromboembolic occurrence or a hypercoagulable state has not been studied.

Adverse Reactions:
Dogs: A field study involving 224 dogs was conducted.[1] Based on the results of this study, GI abnormalities (vomiting, soft stools, diarrhea, and inappetance) were the most common adverse reactions associated with the administration of meloxicam.

The following adverse reactions are based on post-approval adverse drug event reporting. The categories are listed in decreasing order of frequency by body system:

Gastrointestinal: *vomiting, diarrhea, melena, gastrointestinal ulceration*
Urinary: *azotemia, elevated creatinine, renal failure*
Neurological/Behavioral: *lethargy, depression*
Hepatic: *elevated liver enzymes*
Dermatologic: *pruritus*

Death has been reported as an outcome of the adverse events listed above. **Acute renal failure and death have been associated with the use of meloxicam in cats.**

Information For Dog Owners: Meloxicam, like other NSAIDs, is not free from adverse reactions. Owners should be advised of the potential for adverse reactions and be informed of the clinical signs associated with NSAID intolerance. Adverse reactions may include vomiting, diarrhea, lethargy, decreased appetite and behavioral changes. Dog owners should be advised when their pet has received a meloxicam injection. Dog owners should contact their veterinarian immediately if possible adverse reactions are observed, and dog owners should be advised to discontinue METACAM therapy.

Effectiveness:
Dogs: The effectiveness of METACAM 5 mg/mL Solution for Injection was demonstrated in a field study involving a total of 224 dogs representing various breeds, all diagnosed with osteoarthritis.[1] This placebo-controlled, masked study was conducted for 14 days. Dogs received a subcutaneous injection of 0.2 mg/kg METACAM 5 mg/mL Solution for Injection on day 1. The dogs were maintained on 0.1 mg/kg oral meloxicam from days 2 through 14. Variables evaluated by veterinarians included lameness, weight-bearing, pain on palpation, and overall improvement. Variables assessed by owners included mobility, ability to rise, limping, and overall improvement.

In this field study, dogs showed clinical improvement with statistical significance after 14 days of meloxicam treatment for all variables.

Reference: 1. FOI for NADA 141-219 METACAM (meloxicam) 5 mg/mL Solution for Injection.

Manufactured for:
Boehringer Ingelheim Vetmedica, Inc.
St. Joseph, MO 64506 U.S.A.

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Previcox® (firocoxib)

CHEWABLE TABLETS

Brief Summary: Before using* PREVICOX, *please consult the product insert, a summary of which follows:

Caution: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

Indications: PREVICOX (firocoxib) Chewable Tablets are indicated for the control of pain and inflammation associated with osteoarthritis and for the control of postoperative pain and inflammation associated with soft-tissue and orthopedic surgery in dogs.

Contraindications: Dogs with known hypersensitivity to firocoxib should not receive PREVICOX.

Warnings: Not for use in humans. Keep this and all medications out of the reach of children. Consult a physician in case of accidental ingestion by humans.

For oral use in dogs only. Use of this product at doses above the recommended 2.27 mg/lb (5.0 mg/kg) in puppies less than seven months of age has been associated with serious adverse reactions, including death (see Animal Safety). Due to tablet sizes and scoring, dogs weighing less than 12.5 lb (5.7 kg) cannot be accurately dosed.

All dogs should undergo a thorough history and physical examination before the initiation of NSAID therapy. Appropriate laboratory testing to establish hematological and serum baseline data is recommended prior to and periodically during administration of any NSAID. ***Owners should be advised to observe for signs of potential drug toxicity (see Adverse Reactions and Animal Safety) and be given a Client Information Sheet about* PREVICOX *Chewable Tablets.***

For technical assistance or to report suspected adverse events, call 1-877-217-3543. For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDAVETS or http://www.fda.gov/AnimalVeterinary/SafetyHealth

Precautions: This product cannot be accurately dosed in dogs less than 12.5 pounds in body weight. Consider appropriate washout times when switching from one NSAID to another or when switching from corticosteroid use to NSAID use.

As a class, cyclooxygenase inhibitory NSAIDs may be associated with renal, gastrointestinal and hepatic toxicity. Sensitivity to drug-associated adverse events varies with the individual patient. Dogs that have experienced adverse reactions from one NSAID may experience adverse reactions from another NSAID. Patients at greatest risk for adverse events are those that are dehydrated, on concomitant diuretic therapy, or those with existing renal, cardiovascular, and/or hepatic dysfunction. Concurrent administration of potentially nephrotoxic drugs should be carefully approached and monitored. NSAIDs may inhibit the prostaglandins that maintain normal homeostatic function. Such anti-prostaglandin effects may result in clinically significant disease in patients with underlying or pre-existing disease that has not been previously diagnosed. Since NSAIDs possess the potential to produce gastrointestinal ulceration and/or gastrointestinal perforation, concomitant use of PREVICOX Chewable Tablets with other anti-inflammatory drugs, such as NSAIDs or corticosteroids, should be avoided. The concomitant use of protein-bound drugs with PREVICOX Chewable Tablets has not been studied in dogs. Commonly used protein-bound drugs include cardiac, anticonvulsant, and behavioral medications. The influence of concomitant drugs that may inhibit the metabolism of PREVICOX Chewable Tablets has not been evaluated. Drug compatibility should be monitored in patients requiring adjunctive therapy. If additional pain medication is needed after the daily dose of PREVICOX, a non-NSAID class of analgesic may be necessary. Appropriate monitoring procedures should be employed during all surgical procedures. Anesthetic drugs may affect renal perfusion, approach concomitant use of anesthetics and NSAIDs cautiously. The use of parenteral fluids during surgery should be considered to decrease potential renal complications when using NSAIDs perioperatively. The safe use of PREVICOX Chewable Tablets in pregnant, lactating or breeding dogs has not been evaluated.

Adverse Reactions:

Osteoarthritis: In controlled field studies, 128 dogs (ages 11 months to 15 years) were evaluated for safety when given PREVICOX Chewable Tablets at a dose of 2.27mg/lb (5.0 mg/kg) orally once daily for 30 days. The following adverse reactions were observed. Dogs may have experienced more than one of the observed adverse reactions during the study.

Adverse Reactions Seen in U. S. Field Studies

Adverse Reactions	PREVICOX *(n=128)*	*Active Control (n=121)*
Vomiting	5	8
Diarrhea	1	10
Decreased Appetite or Anorexia	3	3
Lethargy	1	3
Pain	2	1
Somnolence	1	1
Hyperactivity	1	0

PREVICOX (firocoxib) Chewable Tablets were safely used during field studies concomitantly with other therapies, including vaccines, anthelmintics, and antibiotics.

Soft-tissue Surgery: In controlled field studies evaluating soft-tissue postoperative pain and inflammation, 258 dogs (ages 10.5 weeks to 16 years) were evaluated for safety when given PREVICOX Chewable Tablets at a dose of 2.27 mg/lb (5.0 mg/kg) orally approximately 2 hours prior to surgery and once daily thereafter for up to two days. The following adverse reactions were observed. Dogs may have experienced more than one of the observed reactions during the study.

Adverse Reactions Seen in the Soft-tissue Surgery Postoperative Pain Field Studies

Adverse Reactions	*Firocoxib Group (n=127)*	*Control Group* (n=131)*
Vomiting	5	6
Diarrhea	1	1
Bruising at Surgery Site	1	1
Respiratory Arrest	1	0
SQ Crepitus in Rear Leg and Flank	1	0
Swollen Paw	1	0

**Sham-dosed (pilled)*

Orthopedic Surgery: In a controlled field study evaluating orthopedic postoperative pain and inflammation, 226 dogs of various breeds, ranging in age from 1 to 11.9 years in the PREVICOX-treated groups and 0.7 to 17 years in the control group were evaluated for safety. Of the 226 dogs, 118 were given PREVICOX Chewable Tablets at a dose of 2.27 mg/lb (5.0 mg/kg) orally approximately 2 hours prior to surgery and once daily thereafter for a total of three days. The following adverse reactions were observed. Dogs may have experienced more than one of the observed reactions during the study.

Adverse Reactions Seen in the Orthopedic Surgery Postoperative Pain Field Study

Adverse Reactions	*Firocoxib Group (n=118)*	*Control Group* (n=108)*
Vomiting	1	0
Diarrhea	2**	1
Bruising at Surgery Site	2	3
Inappetence/ Decreased Appetite	1	2
Pyrexia	0	1
Incision Swelling, Redness	9	5
Oozing Incision	2	0

A case may be represented in more than one category.
*Sham-dosed (pilled).
**One dog had hemorrhagic gastroenteritis.

Post-Approval Experience (Rev. 2009): The following adverse reactions are based on post-approval adverse drug event reporting. The categories are listed in decreasing order of frequency by body system:

Gastrointestinal: *Vomiting, anorexia, diarrhea, melena, gastrointestinal perforation, hematemesis, hematachezia, weight loss, gastrointestinal ulceration, peritonitis, abdominal pain, hypersalivation, nausea*

Urinary: *Elevated BUN, elevated creatinine, polydypsia, polyuria, hematuria, urinary incontinence, proteinuria, kidney failure, azotemia, urinary tract infection*

Neurological/Behavioral/Special Sense: *Depression/lethargy, ataxia, seizures, nervousness, confusion, weakness, hyperactivity, tremor, paresis, head tilt, nystagmus, mydriasis, aggression, uveitis*

Hepatic: *Elevated ALP, elevated ALT, elevated bilirubin, decreased albumin, elevated AST, icterus, decreased or increased total protein and globulin, pancreatitis, ascites, liver failure, decreased BUN*

Hematological: *Anemia, neutrophilia, thrombocytopenia, neutropenia*

Cardiovascular/Respiratory: *Tachypnea, dyspnea, tachycardia*

Dermatologic/Immunologic: *Pruritis, fever, alopecia, moist dermatitis, autoimmune hemolytic anemia, facial/muzzle edema, urticaria*

In some situations, death has been reported as an outcome of the adverse events listed above.

For a complete listing of adverse reactions for firocoxib reported to the CVM see: http://www.fda.gov/downloads/AnimalVeterinary/SafetyHealth/ProductSafetyInformation/UCM055407.pdf

Information For Dog Owners: PREVICOX, like other drugs of its class, is not free from adverse reactions. Owners should be advised of the potential for adverse reactions and be informed of the clinical signs associated with drug intolerance. Adverse reactions may include vomiting, diarrhea, decreased appetite, dark or tarry stools, increased water consumption, increased urination, pale gums due to anemia, yellowing of gums, skin or white of the eye due to jaundice, lethargy, incoordination, seizure, or behavioral changes. **Serious adverse reactions associated with this drug class can occur without warning and in rare situations result in death (see Adverse Reactions). Owners should be advised to discontinue PREVICOX therapy and contact their veterinarian immediately if signs of intolerance are observed.** The vast majority of patients with drug-related adverse reactions have recovered when the signs are recognized, the drug is withdrawn, and veterinary care, if appropriate, is initiated. Owners should be advised of the importance of periodic follow up for all dogs during administration of any NSAID.

Effectiveness: Two hundred and forty-nine dogs of various breeds, ranging in age from 11 months to 20 years, and weighing 13 to 175 lbs, were randomly administered PREVICOX or an active control drug in two field studies. Dogs were assessed for lameness, pain on manipulation, range of motion, joint swelling, and overall improvement in a non-inferiority evaluation of PREVICOX compared with the active control. At the study's end, 87% of the owners rated PREVICOX-treated dogs as improved. Eighty-eight percent of dogs treated with PREVICOX were also judged improved by the veterinarians. Dogs treated with PREVICOX showed a level of improvement in veterinarian-assessed lameness, pain on palpation, range of motion, and owner-assessed improvement that was comparable to the active control. The level of improvement in PREVICOX-treated dogs in limb weight bearing on the force plate gait analysis assessment was comparable to the active control. In a separate field study, two hundred fifty-eight client-owned dogs of various breeds, ranging in age from 10.5 weeks to 16 years and weighing from 7 to 168 lbs, were randomly administered PREVICOX or a control (sham-dosed-pilled) for the control of postoperative pain and inflammation associated with soft-tissue surgical procedures such as abdominal surgery (e.g., ovariohysterectomy, abdominal cryptorchidectomy, splenectomy, cystotomy) or major external surgeries (e.g., mastectomy, skin tumor removal ≤8 cm). The study demonstrated that PREVICOX-treated dogs had significantly lower need for rescue medication than the control (sham-dosed-pilled) in controlling postoperative pain and inflammation associated with soft-surgery. A multi-center field study with 226 client-owned dogs of various breeds, and ranging in age from 1 to 11.9 years in the PREVICOX-treated groups and 0.7 to 17 years in the control group was conducted. Dogs were randomly assigned to either the PREVICOX or the control (sham-dosed-pilled) group for the control of postoperative pain and inflammation associated with orthopedic surgery. Surgery to repair a ruptured cruciate ligament included the following stabilization procedures: fabellar suture and/or imbrication, fibular head transposition, tibial plateau leveling osteotomy (TPLO), and 'over the top' technique. The study (n = 220 for effectiveness) demonstrated that PREVICOX-treated dogs had significantly lower need for rescue medication than the control (sham-dosed-pilled) in controlling postoperative pain and inflammation associated with orthopedic surgery.

Animal Safety: In a targeted animal safety study, firocoxib was administered orally to healthy adult Beagle dogs (eight dogs per group) at 5, 15, and 25 mg/kg (1, 3, and 5 times the recommended total daily dose) for 180 days. At the indicated dose of 5 mg/kg, there were no treatment-related adverse events. Decreased appetite, vomiting, and diarrhea were seen in dogs in all dose groups, including unmedicated controls, although vomiting and diarrhea were seen more often in dogs in the 5X dose group. One dog in the 3X dose group was diagnosed with juvenile polyarteritis of unknown etiology after exhibiting recurrent episodes of vomiting and diarrhea, lethargy, pain, anorexia, ataxia, proprioceptive deficits, decreased albumin levels, decreased and then elevated platelet counts, increased bleeding times, and elevated liver enzymes. On histopathologic examination, a mild ileal ulcer was found in one 5X dog. This dog also had a decreased serum albumin which returned to normal by study completion. One control and three 5X dogs had focal areas of inflammation in the pylorus or small intestine. Vacuolization without inflammatory cell infiltrates was noted in the thalamic region of the brain in three control, one 3X, and three 5X dogs. Mean ALP was within the normal range for all groups but was greater in the 3X and 5X dose groups than in the control group. Transient decreases in serum albumin were seen in multiple animals in the 3X and 5X dose groups, and in one control animal. In a separate safety study, firocoxib was administered orally to healthy juvenile (10-13 weeks of age) Beagle dogs at 5, 15, and 25 mg/kg (1, 3, and 5 times the recommended total daily dose) for 180 days. At the indicated (1X) dose of 5 mg/kg, on histopathologic examination, three out of six dogs had minimal periportal hepatic fatty change. On histopathologic examination, one control, one 1X, and two 5X dogs had diffuse slight hepatic fatty change. These animals showed no clinical signs and had no liver enzyme elevations. In the 3X dose group, one dog was euthanized because of poor clinical condition (Day 63). This dog also had a mildly decreased serum albumin. At study completion, out of five surviving and clinically normal 3X dogs, three had minimal periportal hepatic fatty change. Of twelve dogs in the 5X dose group, one died (Day 82) and three moribund dogs were euthanized (Days 38, 78, and 79) because of anorexia, poor weight gain, depression, and in one dog, vomiting. One of the euthanized dogs had ingested a rope toy. Two of these 5X dogs had mildly elevated liver enzymes. At necropsy all five of the dogs that died or were euthanized had moderate periportal or severe panzonal hepatic fatty change; two had duodenal ulceration; and two had pancreatic edema. Of two other clinically normal 5X dogs (out of four euthanized as comparators to the clinically affected dogs), one had slight and one had moderate periportal hepatic fatty change. Drug treatment was discontinued for four dogs in the 5X group. These dogs survived the remaining 14 weeks of the study. On average, the dogs in the 3X and 5X dose groups did not gain as much weight as control dogs. Rate of weight gain was measured (instead of weight loss) because these were young growing dogs. Thalamic vacuolation was seen in three of six dogs in the 3X dose group, five of twelve dogs in the 5X dose group, and to a lesser degree in two unmedicated controls. Diarrhea was seen in all dose groups, including unmedicated controls. In a separate dose tolerance safety study involving a total of six dogs (two control dogs and four treated dogs), firocoxib was administered to four healthy adult Beagle dogs at 50 mg/kg (ten times the recommended daily dose) for twenty-two days. All dogs survived to the end of the study. Three of the four treated dogs developed small intestinal erosion or ulceration. Treated dogs that developed small intestinal erosion or ulceration had a higher incidence of vomiting, diarrhea, and decreased food consumption than control dogs. One of these dogs had severe duodenal ulceration, with hepatic fatty change and associated vomiting, diarrhea, anorexia, weight loss, ketonuria, and mild elevations in AST and ALT. All four treated dogs exhibited progressively decreasing serum albumin that, with the exception of one dog that developed hypoalbuminemia, remained within normal range. Mild weight loss also occurred in the treated group. One of the two control dogs and three of the four treated dogs exhibited transient increases in ALP that remained within normal range.

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1-877-217-3543
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STANDOUTS IN THE FIELD

From Tasha McNerney, BS, CVT, CVPP, VTS (anesthesia and analgesia)

A few examples of badass technicians making professional strides in the industry:

- Nancy Shaffran was the first technician to become president of the International Veterinary Academy of Pain Management.
- Stephen Cital is the co-Founder of the Veterinary Cannabis Academy, which strives to teach veterinarians and staff about safe and appropriate use based on scientific evidence.
- I was the first technician ever to be invited to the National Conference in Moscow Russia (okay … shameless self-promotion, but it was pretty cool to be asked out of all the choices).

DELIVERING COMPASSIONATE CARE

From Robin Downing, DVM, DAAPM, DACVSMR, CVPP, CCRP, CVA, MS

We had a client whose cat needed to receive subcutaneous fluids three times per week. She lived alone, and at one point she had to have a medical procedure that left her unable to deliver her cat's fluids for a period of several weeks. One of my veterinary technicians heard her story and, on her own, reached out to this client to offer to come to her home to deliver the fluids until the owner was capable of doing it herself. This was compassionate initiative at its very best!

STOP IN THE NAME OF LOVE

From Bash Halow, LVT, CVPM

When I worked in New York, we had this really hot, former male model client who used to bring his dog in for care. All the women (and some of the men!) in the office were crazy for him. All except one. Diedra, a licensed tech and quite a looker herself, was cool as a cucumber when it came to guys, the model included. And, of course, this drove the model to distraction.

Every time he came in, he always asked if Diedra was there and he waited longer, if necessary, just to have her start the appointment. After each visit, we grilled Diedra on what happened in the room: "Did he talk to you? Does he seem interested?"

"Yeah, I guess," Diedra would say, brushing a long lock of blond hair out of her face. "I guess."

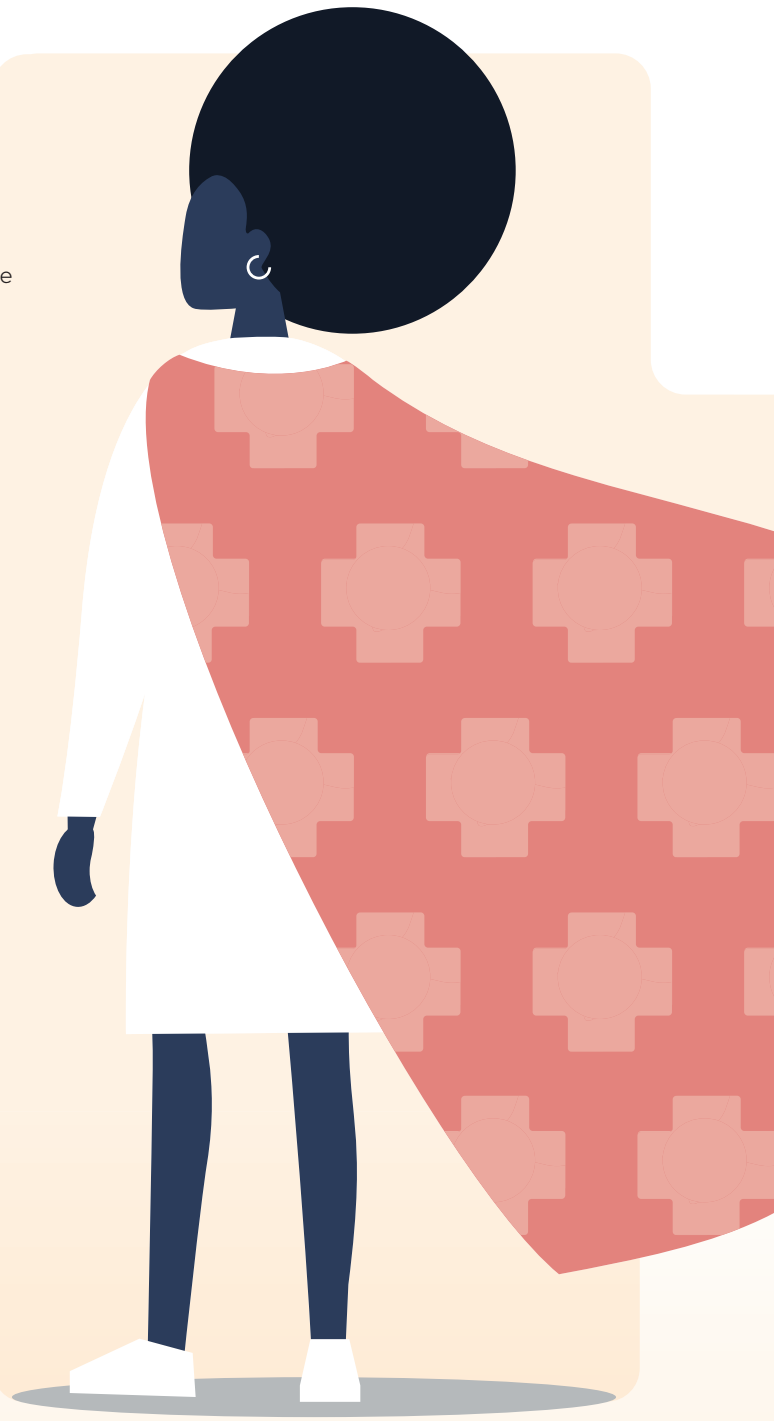
We all wanted to kill her.

One day, I'm in the room holding for Diedra while she was preparing to take the model-dog's temperature. Mr. Model is standing nearby and the romantic tension in the room is enough to make me weak in the knees. Unbelievably, while Diedra is parting the rump hairs of this dog to find the insertion point for the thermometer, I watch Mr. Model reach into his pocket and slip a folded piece of paper under the dog's collar, then he gives me the shush finger. I can't believe it. I actually start to blush!

After what feels like an hour, Deidra pulls the thermometer out of the dog's rear, mumbles 101 and makes her way to the front of the dog where the patient's chart was located. Mr. Model and I are glued to her to see what will happen next.

Diedra spies the note, grabs it, reads it, looks up at Mr. Model and then as deliberate as you please, she uses it to wipe the crap off the end of the thermometer. Then she says, "I'll go get the doctor."

Diedra, if you're reading this ... wherever you are... the rest of the world and I are still madly in love.

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OPPORTUNITIES TO MAKE A DIFFERENCE

At Banfield, we realize that our people are our greatest asset – so we offer the support to make a difference, every single day both in and outside of our hospitals. We provide paid time off for volunteer work so our associates have the opportunity to give back. In 2016, we had more than 1,000 associates donate over 4,000 hours to various nonprofit organizations.

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To support the financial well-being of our veterinarians, we have introduced a Veterinary Student Debt Relief Pilot Program for full-time Banfield veterinarians. The pilot offers eligible veterinarians:

- A low interest refinancing option with supplementary interest rate reduction of .25% from a third-party financial institution
- A monthly student loan contribution of $150 paid by Banfield directly to qualifying student loans
- A $2,500 payment for each qualifying Banfield student program in which the doctor participates prior to graduating, up to a maximum of $10,000

What to say when you hear 'I can't pay'

When a pet owner hesitates to pay or can't afford an unexpected veterinary bill, make sure you're delivering understanding. *By Gabrielle Roman*

"I just can't pay that today."

You've probably heard this from veterinary clients who've been given large treatment estimates for their sick pets. Maybe they're just shocked at the price and need some time to digest the information. Or maybe they're genuinely struggling and can't afford to pay the amount presented. What can you do in this situation? Lay out options.

Don't say something like this: "Our policy requires that you pay at least the bottom end of the estimate before we move forward on Sammy."

While you're simply trying to communicate the rules of the hospital, what the client hears is this: "We don't care whether your dog lives or dies. We just want your money."

When facing a client who's hesitant to pay, the key is to respond with empathy. Your goal is to communicate not that they have to fork over the money to get the procedure done but that you understand the client's difficulty and want the same thing they do: to make sure their pet gets well.

Try this approach the next time you talk to a client who says they can't pay.

Client: I can't pay this much today.
You: I understand your hesitation. If I were in your situation and saw an estimate like this, it would be tough for me to swallow too. I know what's going on with Sammy is serious, and we want to make sure he gets the care he needs. I want to do everything I can today to make that happen for you.

Client: What are my options?
You: One option we have is a third-party creditor. Here's a simple application you can fill out now—they'll be able to extend you the credit to get Sammy taken care of today. If that's doesn't work for you, let's talk some more and see what else we can figure out. Do you want a minute to talk with your family about your options?

Remember, clients don't necessarily know the level of medicine you're practicing or why certain procedures have to take place. They can feel taken advantage of when they see an estimate for hundreds or thousands of dollars. Taking the time to talk through how they can pay rather than just telling them they need to pay can go a long way.

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Get to the CORE of veterinary *dental care* with your clients

From the exam room to the pet's home, comprehensive oral and radiographic evaluation dental procedures are important—but how do you get your veterinary clients to agree with you? Here's help. *By Benita Altier, LVT, VTS (dentistry)*

Let's bring light to the ways that we can create value for what we have to offer when it comes to veterinary dental care. If the client is to say "yes" to your recommendations, they first have to feel your passion and conviction. They have to know, at the end of the day, that dental care is needed now and throughout the pet's life. They must appreciate the value of what you are offering them, and that their pet 's value is higher than the financial cost to their wallet.

BRUSNIKAPHOTO/STOCK.ADOBE.COM

So how do you impart the urgency, necessity and complexity of the CORE (Comprehensive Oral and Radiographic Evaluation) dental procedure?

CORE care

First, you need to examine the pet. What you see in the exam room with the client is only a percentage of the disease that is most likely present in the mouth. This visual exam is only the beginning of the clinical exam—a more thorough clinical exam is performed under general anesthesia using an instrument called a dental probe and explorer. The trained veterinary professional can spot "red flags" during this procedure. These observations are vital in creating an initial list of possible concerns that should be communicated to the client.

Even if there are no observable clinical concerns, establishing a baseline of care is extremely important to determine if dental disease is present or absent. Dental

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*BRAVECTO kills fleas and prevents flea infestations for 12 weeks. **BRAVECTO Topical Solution for Cats** kills ticks (black-legged tick) for 12 weeks and American dog ticks for 8 weeks.

[1]BRAVECTO Topical Solution for Cats [prescribing information]. Madison, NJ: Merck Animal Health; 2016.

IMPORTANT SAFETY INFORMATION:

BRAVECTO Topical Solution for Cats: The most common adverse reactions recorded in clinical trials were vomiting, itching, diarrhea, hair loss, decreased appetite, lethargy, and scabs/ulcerated lesions. BRAVECTO has not been shown to be effective for 12-weeks' duration in kittens less than 6 months of age. BRAVECTO is not effective against American dog ticks beyond 8 weeks of dosing. For topical use only. Avoid oral ingestion. The safety of BRAVECTO has not been established in breeding, pregnant and lactating cats. Use with caution in cats with a history of neurologic abnormalities. Neurologic abnormalities have been reported in cats receiving BRAVECTO, even in cats without a history of neurologic abnormalities.

See full Prescribing Information on page 24.

BRAVECTO®

(fluralaner topical solution) for Cats

Caution:
Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian.

Description:
Each tube is formulated to provide a minimum dose of 18.2 mg/lb (40 mg/kg) body weight. Each milliliter contains 280 mg of fluralaner.

The chemical name of fluralaner is (±)-4-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4,5-dihydroisoxazol-3-yl]-2-methyl-*N*-[2-oxo-2-(2,2,2-trifluoroethylamino)ethyl]benzamide. Inactive ingredients: dimethylacetamide, glycofurol, diethyltoluamide, acetone

Indications:
Bravecto kills adult fleas and is indicated for the treatment and prevention of flea infestations (*Ctenocephalides felis*) and the treatment and control of *Ixodes scapularis* (black-legged tick) infestations for 12 weeks in cats and kittens 6 months of age and older, and weighing 2.6 pounds or greater.

Bravecto is also indicated for the treatment and control of *Dermacentor variabilis* (American dog tick) infestations for 8 weeks in cats and kittens 6 months of age and older, and weighing 2.6 pounds or greater.

Dosage and Administration:
Bravecto should be administered topically as a single dose every 12 weeks according to the **Dosage Schedule** below to provide a minimum dose of 18.2 mg/lb (40 mg/kg) body weight.

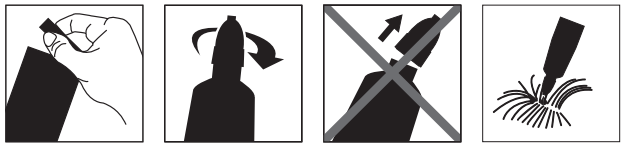
Bravecto may be administered every 8 weeks in case of potential exposure to *Dermacentor variabilis* ticks (see **Effectiveness**).

Dosage Schedule:

Body Weight Ranges (lb)	Fluralaner content (mg/tube)	Tubes Administered
2.6 – 6.2	112.5	One
>6.2 – 13.8	250	One
>13.8 – 27.5*	500	One

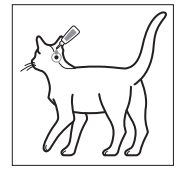
* Cats over 27.5 lb should be administered the appropriate combination of tubes.

Step 1: Immediately before use, open the pouch and remove the tube. Hold the tube at the crimped end with the cap in an upright position (tip up). The cap should be rotated clockwise or counter clockwise one full turn. The cap is designed to stay on the tube for dosing and should not be removed. The tube is open and ready for application when a breaking of the seal is felt.



Step 2: The cat should be standing or lying with its back horizontal during application. Part the fur at the administration site. Place the tube tip vertically against the skin at the base of the skull of the cat.

Step 3: Squeeze the tube and gently apply the entire contents of Bravecto directly to the skin at the base of the skull of the cat. Avoid applying an excessive amount of solution that could cause some of the solution to run and drip off of the cat. If a second spot is needed to avoid run off, then apply the second spot slightly behind the first spot.



Treatment with Bravecto may begin at any time of the year and can continue year round without interruption.

Contraindications:
There are no known contraindications for the use of the product.

WARNINGS
Human Warnings:
Not for human use. Keep this and all drugs out of the reach of children.

Do not contact or allow children to contact the application site until dry.

Keep the product in the original packaging until use in order to prevent children from getting direct access to the product. Do not eat, drink or smoke while handling the product. Avoid contact with skin and eyes. If contact with eyes occurs, then flush eyes slowly and gently with water. **Wash hands and contacted skin thoroughly with soap and water immediately after use of the product.**

The product is highly flammable. Keep away from heat, sparks, open flame or other sources of ignition.

Precautions:
For topical use only. Avoid oral ingestion. (see **Animal Safety**).

Use with caution in cats with a history of neurologic abnormalities. Neurologic abnormalities have been reported in cats receiving Bravecto, even in cats without a history of neurologic abnormalities (see **Adverse Reactions**).

Bravecto has not been shown to be effective for 12-weeks duration in kittens less than 6 months of age. Bravecto is not effective against *Dermacentor variabilis* ticks beyond 8 weeks after dosing (see **Effectiveness**).

The safety of Bravecto has not been established in breeding, pregnant and lactating cats.

Adverse Reactions:
In a well-controlled U.S. field study, which included a total of 161 households and 311 treated cats (224 with fluralaner and 87 with a topical active control), there were no serious adverse reactions.

Percentage of Cats with Adverse Reactions (AR) in the Field Study

Adverse Reaction (AR)	Bravecto Group: Percent of Cats with the AR During the 105–Day Study (n=224 cats)	Control Group: Percent of Cats with the AR During the 84–Day Study (n=87 cats)
Vomiting	7.6%	6.9%
Pruritus	5.4%	11.5%
Diarrhea	4.9%	1.1%
Alopecia	4.9%	4.6%
Decreased Appetite	3.6%	0.0%
Lethargy	3.1%	2.3%
Scabs/Ulcerated Lesions	2.2%	3.4%

In the field study, two cats treated with fluralaner topical solution experienced ataxia. One cat became ataxic with a right head tilt 34 days after the first dose. The cat improved within one week of starting antibiotics. The ataxia and right head tilt, along with lateral recumbency, reoccurred 82 days after administration of the first dose. The cat recovered with antibiotics and was redosed with fluralaner topical solution 92 days after administration of the first dose, with no further abnormalities during the study. A second cat became ataxic 15 days after receiving its first dose and recovered the next day. The cat was redosed with fluralaner topical solution 82 days after administration of the first dose, with no further abnormalities during the study.

In a European field study, two cats from the same household experienced tremors, lethargy, and anorexia within one day of administration. The signs resolved in both cats within 48-72 hours.

In a European field study, there were three reports of facial dermatitis in humans after close contact with the application site which occurred within 4 days of application.

For technical assistance or to report a suspected adverse drug reaction, or to obtain a copy of the Safety Data Sheet (SDS), contact Merck Animal Health at 1-800-224-5318. Additional information can be found at www.bravecto.com. For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or online at http://www.fda.gov/AnimalVeterinary/SafetyHealth.

Clinical Pharmacology:
Peak fluralaner concentrations are achieved between 7 and 21 days following topical administration and the elimination half-life ranges between 11 and 13 days.

Mode of Action:
Fluralaner is for systemic use and belongs to the class of isoxazoline-substituted benzamide derivatives. Fluralaner is an inhibitor of the arthropod nervous system. The mode of action of fluralaner is the antagonism of the ligand-gated chloride channels (gamma-aminobutyric acid (GABA)-receptor and glutamate-receptor).

Effectiveness:
In a well-controlled European laboratory study, Bravecto killed 100% of fleas 8 hours after treatment and reduced the number of live fleas on cats by > 98% within 12 hours after treatment or post-infestation for 12 weeks. In well-controlled laboratory studies, Bravecto demonstrated > 94% effectiveness against *Ixodes scapularis* 48 hours post- infestation for 12 weeks. Bravecto demonstrated > 98% effectiveness against *Dermacentor variabilis* 48 hours post-infestation for 8 weeks, but failed to demonstrate ≥ 90% effectiveness beyond 8 weeks.

In a well-controlled U.S. field study, a single dose of Bravecto reduced fleas by ≥99% for 12 weeks. Cats with signs of flea allergy dermatitis showed improvement in erythema, alopecia, papules, scales, crusts, and excoriation as a direct result of eliminating flea infestations.

Animal Safety:
Margin of Safety Study: In a margin of safety study, Bravecto was administered topically to 11- to 13-week (mean age 12 weeks)-old-kittens at 1, 3, and 5X the maximum labeled dose of 93 mg/kg at three, 8-week intervals (8 cats per group). The cats in the control group (0X) were treated with mineral oil.

There were no clinically-relevant, treatment-related effects on physical examination, body weights, food consumption, clinical pathology (hematology, clinical chemistries, coagulation tests, and urinalysis), gross pathology, histopathology, or organ weights. Cosmetic changes at the application site included matting/clumping/spiking of hair, wetness, or a greasy appearance.

Oral Safety Study: In a safety study, one dose of Bravecto topical solution was administered orally to 6- to 7-month-old- kittens at 1X the maximum labeled dose of 93 mg/kg. The kittens in the control group (0X) were administered saline orally. There were no clinically-relevant, treatment-related effects on physical examination, body weights, food consumption, clinical pathology (hematology, clinical chemistries, coagulation tests, and urinalysis), gross pathology, histopathology, or organ weights. All treated kittens experienced salivation and four of six experienced coughing immediately after administration. One treated kitten experienced vomiting 2 hours after administration.

In a well-controlled field study Bravecto was used concurrently with other medications, such as vaccines, anthelmintics, antibiotics, steroids and sedatives. No adverse reactions were observed from the concurrent use of Bravecto with other medications.

Storage Conditions:
Do not store above 77°F (25°C). Store in the original package in order to protect from moisture. The pouch should only be opened immediately prior to use.

How Supplied:
Bravecto is available in three strengths for use in cats (112.5, 250, and 500 mg fluralaner per tube). Each tube is packaged individually in a pouch. Product may be supplied in 1 or 2 tubes per carton.

NADA 141-459, Approved by FDA
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disease can be categorized as reversible (gingivitis only) or irreversible (loss of alveolar bone and periodontal ligament attachments, tooth resorption, tooth fractures and other problems). If disease is present, it must be appreciated under anesthesia by a complete clinical oral and radiographic examination—this is what the CORE dental procedure is.

Treatment must take place to bring the mouth back to a healthier state, then an educated plan can be put in place regarding the timing of the next CORE dental procedure as well as a daily home care plan.

What your hospital offers regarding the CORE dental procedure could be very different than what neighboring hospitals offer. Professional dental care should include a proper pre-anesthetic evaluation and pre-anesthetic lab testing, including urine, blood and fecal tests. Placement of an intravenous catheter, IV fluid therapy and dedicated monitoring by trained personnel are essential to prevent morbidity or mortality.

Professional anesthetic management and monitoring, including a comprehensive pain management protocol with regional anesthetic blocks as needed, is vital. A comprehensive clinical oral evaluation with the charting of findings includes:

- Full-mouth dental radiographs
- Interpretation of these radiographs by the veterinarian
- Professional cleaning and polishing using power and hand instrumentation
- Irrigation of all surfaces

It's also important to remember that a licensed veterinarian should perform extractions and other surgical procedures, and anesthesia and time for this are additional.

Explaining these inclusions when a treatment plan is provided to the client can bring much value to what you are offering compared with others. Some hospitals choose to break down costs individually while others prefer to have one set price for the whole CORE procedure, adding extraction or surgery time, additional anesthetic and monitoring time as well as necessary medications separately. Either method is excellent as long as the cost of the procedure is adequately covered.

You are emphasizing patient safety when it comes to anesthesia and alleviating the client's fears regarding their pet's safety while anesthetized, which is critical to bringing value to what you are offering.

Home care

Once we have established a baseline of dental care with our initial CORE dental procedure, ideally at 6 to 18 months of age, then it is imperative to create an understanding that dental care should be done daily at home as well as annually under anesthesia.

Options for home care can range from hands-on daily brushing of the teeth to dental diets, chews, water additives, gels, rinses and wipes. All of these things can be effective at the goal of daily plaque control, which reduces the number of bacteria in the biofilm on tooth surfaces.

The best home care is something that the client will do! If the client is unwilling to commit to doing the work, then home care is non-existent. Combinations of these modalities are even better to prevent plaque and then tartar accumulations, especially under the gum line.

All team members should be aware of the home care products you stock and recommend and be familiar with their use. Creating a written standard and training opportunities for your team helps make home care recommendations successful for the client. Ensuring you have time during the follow-up visit with the pet and the client to demonstrate the proper use of the homecare products that they are committing to use on the pet is vital to making sure the client begins practicing this care at home daily.

The value of what you are doing must always precede price. It is challenging to tell the client what something costs and then back-fill in the value. Strengthening the human-animal bond is part of ensuring the pet has a veterinarian and technical team that advocate for a lifetime of wellness care, including dental care. People trust and return to veterinary hospital teams that they believe have their pet's best interests in mind, and they will know if you do not believe dentistry is an essential aspect of veterinary care for the pet.

Benita Altier, LVT, VTS (dentistry), began her business, Pawsitive Dental Education, with the goal of bringing professional dental instruction to veterinary hospitals and conferences across the United States and Canada. She currently resides in Washington State.

Rehab techs:
Let dogs' noses do the talking

Your veterinary patient's sense of smell is stronger and more precise than your own, and that's nothing to thumb your nose at. Instead, use it to help your rehabilitation process—for pet's sake. *By Kelsey Drenker, CVT, CCRVN*

Finn starts shuffling his back legs as he's walking. He's panting more, and his tongue is now hanging out the side of his mouth. I ask him to perform one more repetition of a figure eight, but he's losing interest in the exercise. I ask him, "Are you getting tired, buddy?"

His owner quickly replies, "Oh, no, he's not tired! He does much more exercise than this at home."

It's common knowledge that a dog's strongest sense is smell. Oftentimes due to anthropomorphism we forget that this is the case, but it's estimated that a dog's sense of smell is 10,000 to 100,000 times more precise than a human's.

This is in part because of the fact that dogs have a separate region in the back of their nose that's solely responsible for olfactory senses, while the rest of inhaled air is involved in respiration. It's thought that up to one-third of a dog's brain is dedicated to olfactory cells, and receptors within this specialized area of the nose are constantly sending signals to the brain for analysis.

Now, bring an animal that has this extraordinary sense into a facility where there have been other animals and where food is a primary motive in order to perform therapeutic exercises. This naturally puts the dog's olfactory system into overdrive, which in turn is constantly stimulating their brain. While the dog may not appear mentally tired because they're engaged in their environment by treats and other scents we can't detect, they're being physically exerted in ways that aren't common to them otherwise.

Drenker's dog, Bear, is working with a rehab peanut while standing on a disc. These are great for core work and pelvic limb muscle engagement, she says.

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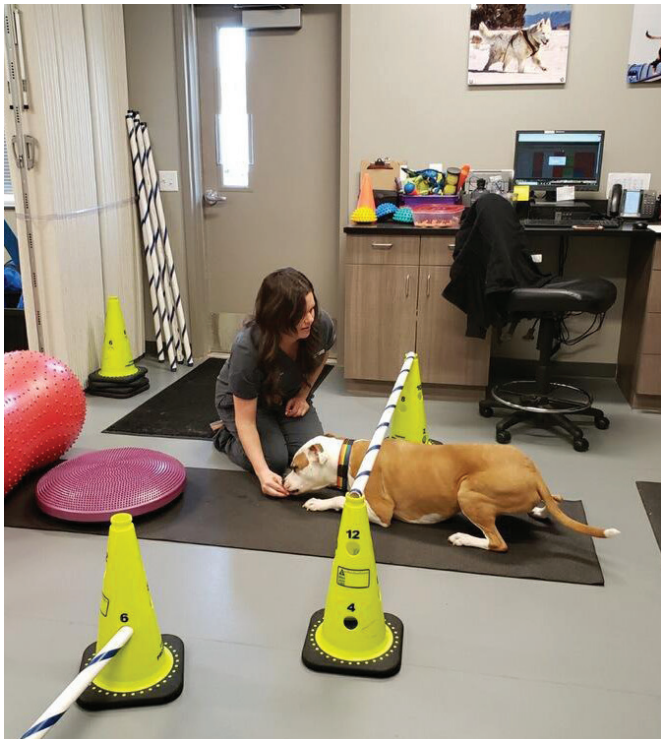

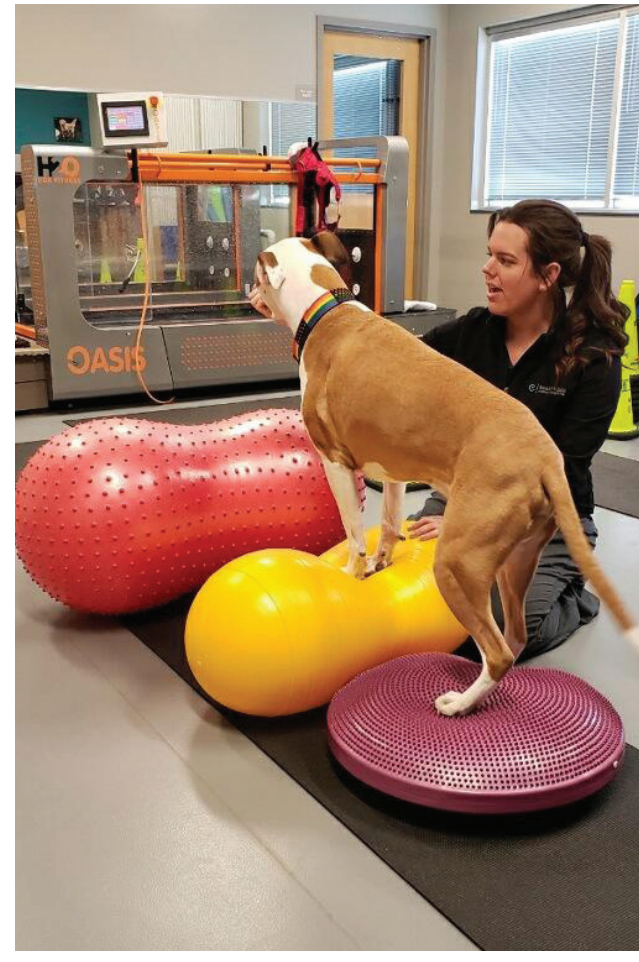

▲ Drenker helps veterinary patient Leonidas (Leo for short) with peanuts and discs, the same exercise Bear did to strengthen his core and engage his pelvic limb muscles.

▶ Drenker helps Leo perform a crawl. She says this is great for elbows and knees (stifles) in particular, specifically with the flexion of both of those joints. Leo presented with elbow and knee issues, so Drenker wanted to focus on range of motion and strengthening surrounding muscles.

Therapeutic exercise, under the umbrella of physical rehabilitation, is about precise movement to engage particular muscle groups for strengthening, conditioning, active stretching and active range of motion. To accomplish these goals, rehabilitation technicians are often asking dogs to step on unsteady involve objects to challenge their balance, lift their limbs higher than normal over obstacles and use supplemental tools such as land or underwater treadmills.

It's crucial to take into consideration that many dogs in rehab are recovering from an injury, whether it is acute or chronic, medically managed or postoperative. These dogs may have muscle atrophy due to activity restriction or compensation with injury, which has decreased their overall strength and increased their rate of muscle fatigue. While it may not appear to be the cardiovascular exercise owners are used to doing alongside their furry companions such as walking, running, hiking or playing fetch, muscle fatigue can happen sooner in the rehabilitation environment due to the fact that we're asking them to perform physical exercises that aren't often a part of their daily life.

All animals are at risk of increased injury occurrence when performing exercise during muscle fatigue. When fatigued, muscle fibers are not able to perform at the same level of intensity and therefore have a decreased ability to produce force. Continued exercise in this state could cause structural damage to muscle cells and supportive tissue.

It's our job as rehabilitation technicians to be a voice for the animals we work with and watch for physical signs of fatigue as opposed to the mental signs. The physical signs can easily be overshadowed due to the the mental engagement of being in the rehab facility and working with food-driven animals. Some common signs of fatigue can be seen as excessive panting (particularly with the tongue hanging out the side of their mouth), shuffling limbs when walking and not performing exercises with proper form (compensation). If there's any doubt about causing injury, always consult your veterinarian.

Kelsey Drenker, CVT, CCRVN, is a sports medicine technician at Wheat Ridge Animal Hospital by Ethos Veterinary Health in Wheat Ridge, Colorado.

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[1] Data on file.
[2] Data on file.
[3] Data on file.

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Heartworm prevention: Don't take 'no' for an answer

The clinical team in the exam room tells a veterinary client all about parasite preventives. But the client may ask anybody in the hospital, including receptionists, 'Do I really need to shell out money for this?' Is everyone armed for the conversation?

The American Heartworm Society (AHS) canine guidelines for heartworm prevention, diagnosis and treatment were recently revised, with a strong emphasis placed on the importance of year-round heartworm prevention.

Why? A 2016 AHS survey of almost 5,000 veterinary practices revealed that the number of heartworm-positive pets per clinic rose by 21% since the previous survey was conducted three years earlier. Among veterinarians who reported that heartworm disease was "on the rise" since the previous survey, the leading reason was that "owners skip doses or don't give preventives year-round." This compliance conundrum highlights the importance of client conversations about heartworm prevention—a priority that puts staff members front and center. Following are suggestions for handling heartworm prevention pushback from owners.

C

Client: *"Heartworm medicine's so expensive. Why should I spend my money on it?"*

V

Veterinary team member: "While it seems expensive, you get a lot more value for your prevention dollar than you realize. Consider this: You can protect your dog from a fatal heartworm infection for an entire month for what you'd spend on a pastry and coffee at your local coffee shop. Many monthly medications also offer more than just heartworm protection—some protect against fleas and common intestinal worms, too. That's important to your pet's health as well as that of your family, when you consider that parasites like roundworms and hookworms can be spread to your kids and other household members."

C

Client: *"I still don't think I can justify spending money on it."*

Veterinary team member: "Here are two important facts you need to know. First, preventing heartworms is a lot cheaper than treating them;

V

heartworm treatment can cost up to $1,000 in medication and veterinary bills. Secondly, while heartworm disease in dogs can be treated and the worms eliminated, the damage left by heartworms is forever, and many dogs are left with residual health problems."

(Bonus round for staff members in "nonendemic" areas)

Client: *"I don't think I need it. Heartworms aren't that common around here."*

Veterinary team member: "While heartworm disease isn't as common here as in other parts of the U.S., heartworms have been diagnosed in every state in this country. In parts of the country that stay cold for six months or more, there are lots of warm, protected spots where mosquitoes that transmit heartworms can live. In urban areas, radiated heat is stored in concrete and asphalt and is released at night when mosquitoes are active. In rural areas, mosquitoes may find a warm spot in a hollow log or animal burrow to ride out the winter. In dry locales, thanks to sprinkler systems, birdbaths and watering cans, there are pockets of standing water everywhere where mosquitoes can breed.

"I know parasite preventives may be an added expense you weren't expecting, and you may be weighing the costs and benefits. Makes perfect sense. It boils down to this: No matter where you live, is it worth putting your pet at risk? Isn't it easier to give a single medication once a month—or an injection every six months—to keep him or her safe? Think about it this way: You may never have been in a car wreck, but you still put on your seat belt. Would you risk your life by not wearing one? Why would you risk your pet's life by not giving him or her heartworm prevention?"

Client handout:

'Is heartworm prevention worth it?'

If your veterinary clients have questions about whether they really need to buy and administer heartworm preventives, this client handout can kick off a conversation.

FROM YOUR VETERINARIAN

dvm360

Is heartworm prevention worth it?

Heartworm medication is an expense you might not have expected, but it's an important one. Here are answers to common questions to help you think about a single medication once a month—or an injection every six months—to keep your pet safe and sound.

Heartworm medicine can be expensive. Why should I spend my money on it?

While it seems expensive, you get a lot more value for your preventive dollar than you realize. Consider this: You can protect your dog from a fatal heartworm infection for an entire month for what you'd spend on a pastry and coffee at your favorite coffee shop.

Many monthly medications also offer more than just heartworm protection—some protect against fleas and common intestinal worms, too. That's important to your pet's health as well as that of your family, when you consider that parasites like roundworms and hookworms can be spread to your kids and other household members.

I still don't think I can justify spending money on it

Here are two important facts you need to know. First, preventing heartworms is a lot cheaper than treating them; heartworm treatment can cost up to $1,000 in medication and veterinary bills. Second, while heartworm disease in dogs can be treated and the worms eliminated, the damage left by heartworms is forever, and many dogs are left with residual health problems.

I don't think I need it. Heartworms aren't that common around here.

While heartworm disease may not be as common in some parts of the U.S., heartworms have been diagnosed in every state in the country. In parts of the country that stay cold for six months or more, there are lots of warm, protected spots where mosquitoes that transmit heartworms can live. In urban areas, radiated heat is stored in concrete and asphalt and is released at night when mosquitoes are active. In rural areas, mosquitoes may find a warm spot in a hollow log or animal burrow to ride out the winter. In dry locales, thanks to sprinkler systems, birdbaths and watering cans, there are pockets of standing water everywhere where mosquitoes can breed.

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HEARTWORM TREATMENT
Medications
+ Veterinary fees
+ Post-treatment preventive
+ Lab tests
+ X-rays
$1,200-$1,800

HEARTWORM PREVENTION
Twelve months of heartworm prevention
$70-$200

Source: American Heartworm Society, heartwormsociety.org

A 2016 American Heartworm Society survey of almost 5,000 veterinary practices revealed that the number of heartworm-positive pets per clinic rose by 21 percent since the previous survey of three years earlier. Among veterinarians who reported that heartworm disease was "on the rise" since the previous survey, the leading reason was that "owners skip doses or don't give preventives year-round."

This compliance conundrum highlights the importance of client conversations about heartworm prevention—a priority that puts staff members front and center. Here's a handout that covers a few client concerns about price and invites an ongoing conversation with you about the need for this crucial parasite preventive.

A printable version of this handout is available at **dvm360.com/costofheartworms.**

(CAT PHOTO: ROBERT/STOCK.ADOBE.COM; HEART ILLUSTRATION: LISAGERRARD99/STOCK.ADOBE.COM)

Fear is worse than pain in veterinary patients

As people, we can anticipate relief for the physical pain we feel. Animals don't have this luxury. Here's how to deal with pain coupled with fear, and how pet owners help you heal the hurt. *By Dani McVety, DVM*

Pain and fear: A dreaded combo

Think about the pain of a broken arm. Now think of the negative emotions that may come with it: Anxiety about the impending surgery, recovery, loss of time with children and loved ones and so on. Those negative emotions will only amplify the physical pain I feel. As a person, though, I know that medical attention will help reduce or eliminate my pain.

Animals don't have this luxury.

In her book "Animals in Translation: Using the Mysteries of Autism to Decode Animal Behavior," Temple Grandin, PhD, says, "The single worst thing you can do to an animal emotionally is to make it feel afraid … fear is so bad for animals I think it's worse than pain." And this is one of the most important parts of the end-of-life process: addressing not only physical pain, but stress, anxiety and fear as well.

Consider the senior or geriatric patients you see. Many of our arthritic or immobile pets appear more agitated by their inability to stand up rather than the pain that standing up elicits. They may not understand why they can't ambulate, which in turn leads to excessive painting, whining, crying and additional physical pain as they attempt to move. Many times, the mental battle is bigger than the physical battle with our patients.

Relieve suffering by educating pet owners

These are concepts I discuss with families every day. Veterinary hospice care centers on addressing pain and any other mental stressors that may be present. Because of this, pet owners become our greatest source to identify new developments in the pet's condition early. They will usually feel their bond is so strong (and it often is!) that they can sense the discomfort. With a little retraining and education on how animals may react and perceive pain and anxiety, we can take a big leap forward to make the end-of-life period as pain-free and fear-free as possible.

We also need to teach pet owners about the differences between discomfort, pain and suffering. Euthanasia is not just about ending suffering that's occurring at that moment; it's also about preventing pain from occurring. And with a better understanding of mental and physical pain, clients feel better equipped to make that important decision with the guidance of their veterinarian.

Dr. Dani McVety is owner of Lap of Love Veterinary Hospice and In-Home Euthanasia in Lutz, Florida.

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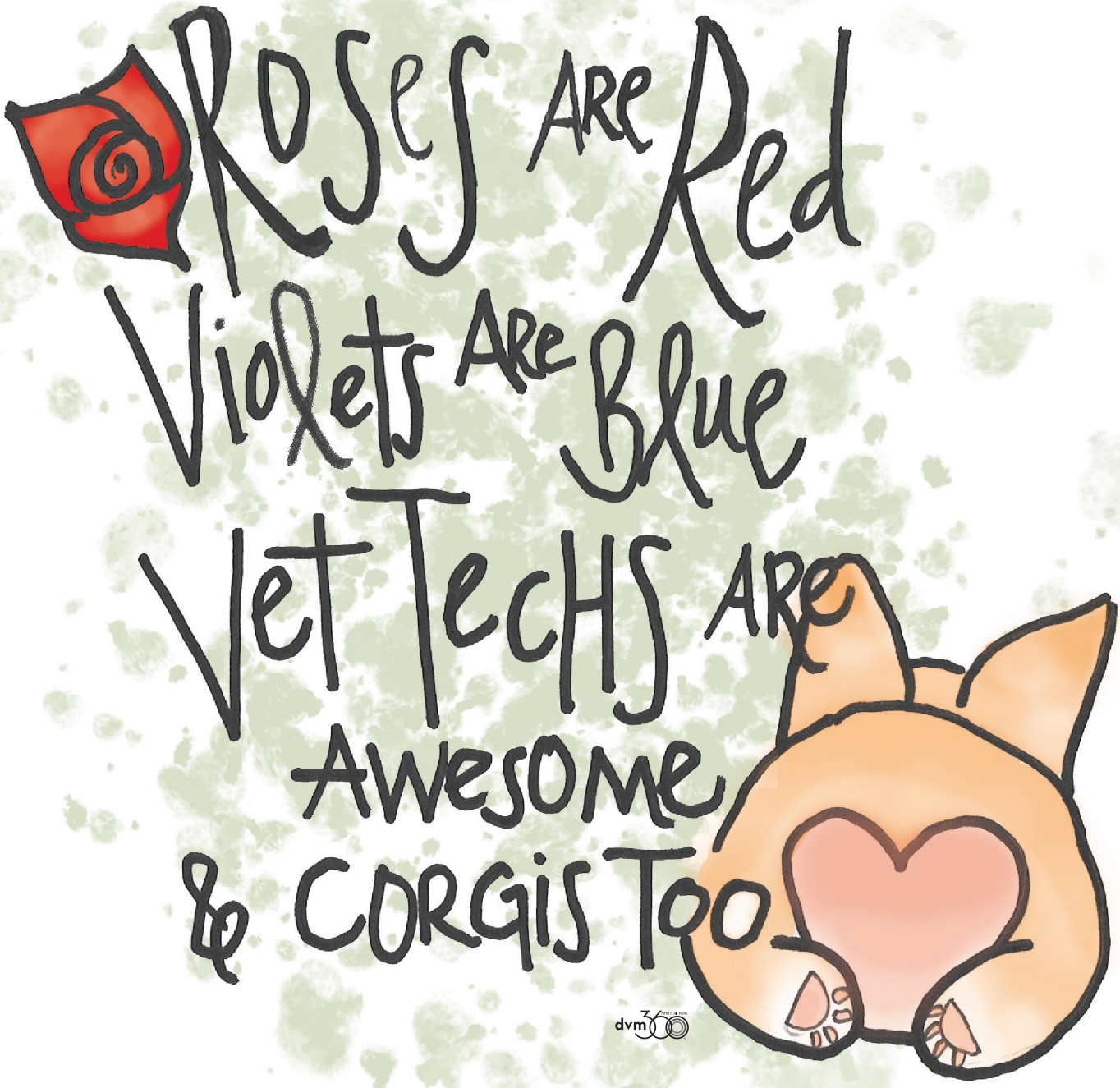
Find all the Fear Free tips you could want online!

Find a whole slew of Fear Free resources, tips, tricks and advice from experts including Drs. Marty Becker, Robin Dowing, Julie Reck and more by visiting **dvm360.com/fearfree.**



This fantastic poem came to us courtesy of the Veterinary Confessionals project. We loved it so much we wanted to create a special love letter to vet techs everywhere, in honor of National Veterinary Technician Week, October 13-19, 2019. For more vet confessions, head over to **dvm360.com/vetsconfess**. And don't miss our coverage of Vet Tech Week at **dvm360.com/vettechweek**, sponsored by our friends at Banfield Pet Health. Three cheers for awesome techs (and, of course, corgis) everywhere.

ILLUSTRATION BY ADRIENNE WAGNER

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Heartgard® Plus
(ivermectin/pyrantel)

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- ✓ Protects dogs from heartworm disease and treats and controls 3 species of hookworms and two species of roundworms
- ✓ Is approved for puppies as young as 6 weeks of age
- ✓ Over 30 years of trusted prevention

[1] Freedom of Information: NADA140-971 (January 15, 1993).

[2] Data on file at Boehringer Ingelheim.

[3] Data on file at Boehringer Ingelheim.

Boehringer Ingelheim

IMPORTANT SAFETY INFORMATION: HEARTGARD® Plus (ivermectin/pyrantel) is well tolerated. All dogs should be tested for heartworm infection before starting a preventive program. Following the use of HEARTGARD Plus, digestive and neurological side effects have rarely been reported. For more information, please see full prescribing information or visit www.HEARTGARD.com.
Please see brief summary on page 33.